



**New Albany Planning Commission Agenda**  
Monday, March 20, 2023 7:00pm

Members of the public must attend the meeting in-person to participate and provide comment. The in-person meeting is held at New Albany Village Hall, 99 West Main Street. The meeting will be streamed for viewing purposes only via the city website at <https://newalbanyohio.org/answers/streaming-meetings/>

**I. Call to order**

**II. Roll call**

**III. Action on minutes:** March 6, 2023

**IV. Additions or corrections to agenda**

Administer the oath to all witnesses/applicants/staff who plan to address the board. "Do you swear to tell the truth and nothing but the truth."

**V. Hearing of visitors for items not on tonight's agenda**

**VI. Cases:**

**VAR-27-2023 Variance**

Variance to the city floodplain ordinance for the development of a new building located at Taylor Farm park (PID: 222-005165).

**Applicant: The city of New Albany**

*Motion of acceptance of staff reports and related documents into the record for VAR-27-2023.*

*Motion of approval for application VAR-27-2023 based on the findings in the staff report with the conditions listed in the staff report, subject to staff approval.*

**VAR-29-2023 Variance**

Variance to Section 5(A) of the Edgemont Subarea 1B zoning text to allow a private swimming pool to be located in the side yard at 6984 Lambton Park (PID: 222-004129-00).

**Applicant: Suncraft Construction Company**

*Motion of acceptance of staff reports and related documents into the record for - VAR-29-2023.*

*Motion of approval for application VAR-29-2023 based on the findings in the staff report with the conditions listed in the staff report, subject to staff approval.*

**FPL-30-2023 Preliminary and Final Plat**

Preliminary and Final plat for the dedication of Third Street, Main Street, Market Street, Granville Street and High Street (222-000329, 222-000312, 222-000563, 222-000300, 222-000572, 222-000167, 222-000224, 222-000169, 222-000316, 222-000770, 222-

000153, 222-000055, 222-000225, 222-000015, 222-000096, 222-000003 ,222-001670, 222-000016, 222-000012, 222-000035, 222-000063, 222-000036).

**Applicant: The city of New Albany**

*Motion of acceptance of staff reports and related documents into the record for FPL-30-2023.*

*Motion of approval for application FPL-30-2023 based on the findings in the staff report with the conditions listed in the staff report, subject to staff approval.*

## **VII. Other business**

### **1. Annual Organizational Meeting**

- Swear in new members
- Elect Chairperson
- Elect Vice-Chairperson
- Elect Secretary
- Appointment of Board of Zoning Appeals Representative
- Establish date, time, and location for 2023 regular meetings

*\*Attendance is defined as in-person presence during the hearing and consideration of applications without a conflict of interest before that commission/board at that meeting. Attendance of all current serving members of the commission/board is encouraged, and three (3) consecutive absences by any member or four (4) absences in any 12-month period shall be considered a forfeiture of the membership to the commission/board. The forfeiture would occur regardless of the reason for the absences. The applicable department designee would then notify the clerk of council so that they can inform council that a new appointment needs to be made.*

## **VIII. Poll members for comment**

## **IX. Adjourn**



**New Albany Planning Commission**  
Monday, March 6, 2023 DRAFT Meeting Minutes

**I. Call to order**

The New Albany Planning Commission held an informal meeting on March 6, 2023 in the New Albany Village Hall. Chair Kirby called the meeting to order at 7:11 p.m.

**II. Roll call**

Those answering roll call:

Mr. Kirby	present
Mr. Wallace	present
Ms. Briggs	present
Mr. Larsen	present
Mr. Schell	present
Council Member Brisk	present

Having all members present, the commission had a quorum.

Staff members present: Law Director Ben Albrecht; Planner Chris Christian; Planning Manager Steve Mayer; Planner Chelsea Nichols; Engineer Will Walther; Planner Anna van der Zwaag; Deputy Clerk Christina Madriguera.

**III. Action on minutes:**

Chair Kirby asked whether there were any changes to the February 22, 2023 minutes.

Vice-Chair Wallace asked that the page numbers be included on the minutes. He further noted that at the end of the first case, ZC-08-2023, Commission Member Schell's second of the motion to accept the staff reports and related documents was missing.

Vice-Chair Wallace moved to approve the February 22, 2023 minutes as corrected. Commission Member Larsen seconded the motion.

Upon roll call: Mr. Wallace, yes; Mr. Larsen, yes; Mr. Schell, yes; Ms. Briggs, yes; Mr. Kirby, abstain. Having 4 yes votes; 1 abstention; the motion to approve the minutes as corrected passed.

**IV. Additions or corrections to agenda**

Chair Kirby asked whether there were any additions or corrections to the agenda.

Planner Nichols responded that proposed changes would be discussed as the cases were called.

**V. Hearing of visitors for items not on tonight's agenda**

Chair Kirby asked whether there were any visitors present who wished to be heard on items not tonight's agenda.

There was no response.

## VI. Cases:

### **ZC-17-2023 Rezoning**

Request to rezone 26.2+/- acres located on a portion of 13312 Jug Street Road from Limited General Employment (L-GE) of an area known as Jug Street North Zoning District to Limited General Employment (L-GE) for an area to be known as the Harrison Road Triangle Zoning District (PID: a portion of 095-111756-00.000).

**Applicant: MBJ Holdings LLC, c/o Aaron Underhill, Esq.**

Planner Nichols stated that she would not be delivering a staff report because the applicant requested that the first two agenda items be tabled and the third agenda item be withdrawn.

Applicant Tom Rubey, of New Albany Company, explained that the three applications, ZC-17-2023, CU-18-2023, and CU-19-2023 were related. They involved rezoning and conditional use permits for the operation of 2 concrete batch plants in separate locations. He stated would like to table the first two applications, the rezoning request and the conditional use request for the operation of a concrete batch plant on Jug Street Road until the April 3, 2023 meeting. The third application, the conditional use request for the operation of a concrete batch plant on Beech Rd, would be withdrawn because, for numerous reasons, he planned to work with city staff to combine it with the request for conditional use on Jug Street Road.

Chair Kirby stated that his first question was about the control of the Bermuda residential subdivision.

Mr. Rubey stated that Bermuda is a factor and his commitments to that neighborhood are not null and void, and that he would return to the commission with a proposal that maintains appropriateness with Bermuda. He further stated that he has concerns about the natural environment and the headwaters of the Blacklick Creek and the fact that this is a request for a conditional use for a span of time rather than a permanent change.

Chair Kirby asked if the commission had questions for the applicant.

Vice-Chair Wallace referenced current staff report and the fact that it called for a 695 ft setback of the concrete operations from adjacent residential properties.

Mr. Rubey stated that he thought the setback in the new application would be closer because the two properties would be combined. He further stated that the city wants it to be within 500 ft as required by code.

Planning Manager Mayer stated that was correct, a 500ft setback is consistent with the TMD zoning requirements and is consistent with surrounding uses.

Mr. Rubey indicated that his analysis was ongoing and he had not yet mapped out the entire site and that he had not yet factored in the road construction project.

Commission Member Larsen asked whether the setback was based on building height as well, 45 ft. versus 65ft.

Planning Manager Mayer stated that within this zone it is a maximum of 45 ft. Newer L-GEs were 85 ft. and there are buildings with a 65ft height. He further stated that the TMD zoning code has no height restrictions.



Mr. Rubey stated that it may be worth taking a ride to view the new Savko batch plant before the next meeting. He further stated that in his opinion, building height is not as significant as hours of operation, cleanliness of materials, wheel washing stations, and environmental preservation easements.

Commission Member Larsen stated that, based upon comments from the last meeting, the environmental impact was one of the major concerns.

Commission Member Schell asked whether the combined plant would be similar in size to the current plant.

Mr. Rubey explained that yes it would be similar.

Chair Kirby pointed out that the property to the north was a great spot for growing trees.

Chair Kirby asked for additional comments.

Mr. Rubey asked for tabling of ZC-17-2023, tabling of CU-18-2023, and withdrawal of CU-19-2023.

Chair Kirby moved to table ZC-17-2023 until the April 3, 2023 meeting. Commission Member Schell seconded the motion.

Chair Kirby asked for discussion on the motion.

There was no response.

Upon roll call: Mr. Kirby, yes; Mr. Schell, yes; Mr. Larsen, yes; Ms. Briggs, yes; Mr. Wallace, yes. Having 5 yes votes; 0 abstentions; and 0 no votes, the motion to table ZC-17-2023 passed.

#### **CU-18-2023 Conditional Use**

Request for a conditional use permit to operate an industrial manufacturing and assembly conditional use to allow the operation of a concrete batch plant located on a portion of 13312 Jug Street Road (PID: a portion of 095-111756-00.000).

**Applicant: MBJ Holdings LLC, c/o Aaron Underhill, Esq.**

Chair Kirby asked whether there was any discussion on CU-18-2023.

There was no response.

Chair Kirby moved to table the application until the April 3, 2023 meeting. Commission Member Briggs seconded the motion.

Chair Kirby asked if there was any discussion on the motion.

There was no response.

Upon roll call: Mr. Kirby, yes; Ms. Briggs, yes; Mr. Wallace, yes; Mr. Larsen, yes; Mr. Schell, yes. Having 5 yes votes; 0 abstentions, and 0 no votes, the motion to table CU-18-2023 passed.

**CU-19-2023 Conditional Use**

Request for a conditional use permit to operate an industrial manufacturing and assembly conditional use to allow the operation of a concrete batch plant located on a portion of 2520 Beech Road SW (PID: a portion of 094-107502-00.000).

**Applicant: MBJ Holdings LLC, c/o Aaron Underhill, Esq.**

Chair Kirby stated that no further action was required on this application as the applicant has requested that it be withdrawn. It is now considered withdrawn.

**FPL-20-2023 Preliminary and Final Plat**

Preliminary and final plat for Alden Woods which will be located at 6700, 6770, 6800 Central College Road in Franklin County (PID: 222-001997, 222-001998 and 222-00199).

**Applicant: Andrew Maletz**

Planner Nichols delivered the staff report. She noted that the Parks and Trails Advisory Board approved the playground plan at its meeting at 6:00 p.m. on March 6<sup>th</sup>.

Chair Kirby asked for comments from Engineering.

Engineer Walther recommended the comments and conditions of approval as described in the engineering staff report.

Chair Kirby asked for comments from the applicant.

Andrew Maletz, applicant, stated he had no conflicts with the staff reports or conditions of approval.

Chair Kirby raised the issue of sidewalks. He stated that he believed this was an r4 district, which would require sidewalks.

Planning Manager Mayer answered yes, sidewalks are required in the frontages where the house faces the road.

Chair Kirby confirmed that the driveways would be blacktop.

Chair Kirby noted that lack of a sidewalk and could be confusing for visitors to the house because there is no pathway to the entry.

Mr. Maletz responded that he would not be opposed to installing sidewalks to each of the homes; that he was still finalizing the design. He stated that a sidewalk, if installed, would be adjacent to the driveway. He further stated that he was not opposed to that as a condition.

Chair Kirby stated that it could be additional blacktop, as opposed to concrete that led to the front door. He further acknowledged that installation along the side of the driveway would also mean that the surface was a shared walkway and driveway.

Planning Manager Mayer stated that code requires that sidewalks be concrete, thus usage of blacktop would be a variance.

Chair Kirby asked whether a variance would be required for the width of the driveway

Planning Manager responded the code establishes a maximum driveway width of 12ft.

Chair Kirby followed and asked whether there was a minimum.

Planning Manager Mayer responded no.

Chair Kirby continued, because there is no minimum, a few feet of the driveway could be used for the concrete sidewalk. He further acknowledged that the sidewalk would likely be driven upon but it would assist with access to the front door.

Mr. Maletz responded that he would not be opposed to placing a sidewalk parallel to the driveway, or offsetting it by 3 ft., and even including a hedge. He reiterated that he was willing to include it as a condition of approval.

Chair Kirby opened discussion of the issue to the commission.

Commission Member Larsen stated that sidewalks are preferable, but noted that there are other places in New Albany with driveway access, instead of sidewalk access.

Commission Member Wallace stated that adding sidewalks where there are none may improve continuity inside the development but noted that even without a sidewalk, the front door would not be difficult to find.

Commission Member Briggs asked where the sidewalks were for lots 7,8, and 9.

Mr. Maletz stated that those are traditional motor court designs, where you can see the front door comfortably from the drive; but had no objection to installing sidewalks there.

Commission Member Wallace stated that the commission could encourage rather than require the installation of sidewalks.

Chair Kirby asked for other comments.

Commission Member Larsen asked how the 30 ft setback along the perimeter was established.

Planner Nichols answered that 30 ft is the minimum rear yard setback requirement for the R-4 zoning district. The buffer zone also follows that same standard.

Commission Member Larsen stated that his concern was that the houses are fairly close to the 30' rear yard setback line and he could see variance requests for play sets.

Planner Nichols answered the zoning text does not permit any construction within the buffer zone but homeowners could in fact request variances.

Planning Manager Mayer stated these are conceptual renderings, variances and rear yard layouts are considerations for the future homeowner and developer.

Chair Kirby asked Commission Member Larsen whether his concern would be ameliorated if the existence of the buffer zone were made clear in the sale documents.

Commission Member Larsen stated that the commission had recently considered variance applications involving homeowners who asserted they had no knowledge of easements on their property. He wanted to make the existence of buffer zones clear to homeowners.

Planning Manager Mayer added that, yes, disclosure of the buffer zone and easements are noted in the recorded plat and in the chain of title of the property.

Mr. Maletz responded that, as the developer, he was supportive of maintaining the buffer zones.

Chair Kirby stated he was worried about managing the expectations of homeowners and contractors down the road and his request was that the sales documents note those restrictions

Vice-Chair Wallace agreed and stated that the complexity is with subsequent owners.

Planning Manager Mayer agreed but reiterated that the chain of title will include all easements and buffer zones.

Chair Kirby moved for acceptance of staff report and related documents into the record for FPL-20-2023. Vice-Chair Wallace seconded the motion.

Chair Kirby asked if there was discussion on the documents motion.

There was no response.

Upon roll call: Mr. Kirby, yes; Mr. Wallace, yes; Mr. Schell, yes; Mr. Larsen, yes; Ms. Briggs, yes. Having 5 yes votes; 0 abstentions; and 0 no votes, the motion to accept the documents passed.

Chair Kirby moved for approval of FPL-20-2023 based on the findings in the staff reports with the conditions listed in the staff report and 2 additional conditions listed below, subject to staff approval. Vice-Chair Wallace seconded the motion.

3. Sidewalks from the public 5-foot-wide concrete sidewalk to the houses are encouraged, subject to staff approval; and
4. That the sales documents prominently note the restrictions of the buffer zones.

Chair Kirby asked if there was discussion on the motion.

There was no response.

Upon roll call: Mr. Kirby, yes; Mr. Wallace, yes; Mr. Schell, yes; Mr. Larsen, yes; Ms. Briggs, yes. Having 5 yes votes; 0 abstentions; and 0 no votes, the motion to approve FPL-20-2023 subject to the conditions in the staff reports and the 2 additional conditions, passed.

**VAR-27-2023 Variance**

Variance to Chapter 1155 associated with development in a floodplain located on at the future site of Taylor Farm park (PID: 222-005165).

**Applicant: The City of New Albany**

Chair Kirby noted that staff had requested this item be tabled.

Planner Christian stated that the city is still working with the contractor on the applications and expected it to be ready on March 20<sup>th</sup>. He further explained that the variance requests related to construction and maintenance of existing structures that are located within the floodplain.

Vice-Chair Wallace moved to table VAR-27-2023 until the March 20, 2023 meeting. Commission Member Schell seconded the motion.

Chair Kirby asked whether there was any discussion on the motion to table.

There was no response.

Upon roll call: Mr. Wallace, yes; Mr. Schell, yes; Mr. Kirby, yes; Ms. Briggs, yes; Mr. Larsen, yes. Having 5 yes votes; 0 votes to abstain; and 0 no votes, the application was tabled until the March 20, 2023 meeting.

## **VII. Other business**

### **New Albany Solar Energy Initiative Best Practices Report**

Planning Manager Mayer welcomed Planner van der Zwaag back. He explained that currently New Albany does not have any regulations involving the use of solar panels or technology and Planner van der Zwaag has taken the lead on developing recommendations to present to the city council.

Planner van der Zwaag delivered the New Albany Solar Energy Initiative Best Practices Report. She explained that the impetus of the report was from the New Albany Strategic Plan and the objective is to balance use of solar with aesthetics. She discussed recent Federal and Ohio legislative changes promoting the use of solar applications.

Commission Member Schell asked for a definition of SolSmart.

Planner van der Zwaag explained that it is a review and rating program for communities. It signifies that a community is open and welcoming to the usage of solar.

Commission Member Schell asked whether gold is the highest level.

Planner van der Zwaag said yes.

Vice-Chair Wallace asked whether it was like a certification.

Planner van der Zwaag responded that it was.

Planning Manager Mayer said yes, like Tree City USA.

Commission Member Schell asked whether it was our intent to pursue a SolSmart rating in New Albany.

Planning Manager Mayer responded that staff was trying to find the right amount of solar regulation and usage for New Albany. The goal is not to pursue a rating but found the examples of usages by SolSmart communities helpful.

Commission Member Larsen asked how long SolSmart had been in business.

Planner van der Zwaag said that was a great question and she would look it up.

Planner van der Zwaag stated that solar panels could be used on flat and pitched roofs, and, that she would like the commission's view on whether solar panels on residences should be restricted, prohibited completely, or encouraged, from view from the right of way.

Chair Kirby responded that such a restriction would create a real hardship for homeowners whose homes are not southward facing. The panels are not effective on the north side of the house and only partially effective on the east and west sides of the house. It would create winners and losers depending on the orientation of the house. This was a matter best addressed by homeowners' associations. He further noted that he could see that ground mounting in the front yard would not be favored because they are not aesthetically pleasing, unless the front yard was very long.

Planner van der Zwaag agreed and stated that it seemed unlikely that a homeowner would want that (ground mounted solar panels in the front yard).

Chair Kirby asked Planner van der Zwaag to review the Solar Use Applications categories.

Planner van der Zwaag reviewed the use categories and design criteria,

## ☰ DRAFT PERMITTED USES & DESIGN CRITERIA

SOLAR USE APPLICATIONS (DRAFT)						
Recommended Installations and Design Guidelines						
	Residential	Commercial	Institutional	Village Center	Community Solar	Accessory Structures
<b>Recommended Allowed Solar Installations</b>						
Roof-mounted panels - pitched roof	X	X	X			X
Roof-mounted panels - flat roof	X	X	X	X		X
Ground-mounted panels	X*	X	X		X	
Building integrated PV materials	X	X	X	X		X
<b>Design Criteria</b>						
Roof-mounted allowed on front faces of buildings		X*	X			X
Ground-mounted allowed in front yard			X*			
Require regular quadrangular shape on pitched roof	X	X				X
Screening for ground-mounted panels	X	X			X	

\* = conditional use

## ☰ NEW ALBANY ☰

Chair Kirby stated that he would put the x on facing the right of way and let the homeowners associations take care of it.

Planning Manager Mayer stated that seemed reasonable; in terms of winners and losers there was probably no way for solar usage to be completely prohibited. The question was whether these uses should be permitted, or permitted as variances within the Village Center.

Chair Kirby asked about the third category, institutional.

Planner van der Zwaag responded that institutional, such as usage on schools could serve an educational purpose as well as the energy and environmental purpose.

Planning Manager Mayer stated that these categories correspond to how the code is organized. A carve-out for usage on schools in the Village Center could be envisioned because schools serve a civic institutional purpose.

Planner Kirby asked whether small utility buildings were accessory structures.

Planning Manager Mayer responded that our code had been loosened to permit greater usage of accessory structures by residents, but our code does not apply to utility pump houses or utility structures.

Chair Kirby confirmed that silence on an issue constituted permissiveness.

Planning Manager Mayer responded yes and encouraged any additional thoughts or comments on the draft permitted uses and design slide.

Commission Member Briggs stated that, as a matter of style, usage of an x was confusing; a green check mark would be helpful.

Commission Member Larsen stated that he was unsure about the driving factors, it was unclear the level of involvement of city council and homeowners associations, and whether council wanted to make a statement about the usage of solar.

Planning Manager Mayer responded that there were 3 driving forces here: resident interest in solar as expressed in the Strategic Plan; recent legislative changes that may remove restrictions on usage of solar; and greater solar panel usage applications for commercial and residential. To be clear the applications are filed under the guise of electrical permits, to make sure that it is plugged in properly. He also stated that New Albany uses solar panels at the public service complex.

Chair Kirby asked which category would include solar canopies over parking lots.

Planner van der Zwaag stated there was not an explicit slide for that.

Planning Manager Mayer stated that is the exact input we are looking for from the commission.

Chair Kirby continued that unlike residences there are no architectural concerns for parking lots. Thus, if solar panels are good for the community, it is all a benefit. He continued that Shawnee State uses parking canopies and it provides the benefit of keeping cars cooler in the summer and it minimizes the creation of a heat island. And further that as the owner of solar panels, he could feel the difference in his house. For industrial and commercial use should not be restricted, it should be left up to the owners.

Commission Member Larsen stated that in general flat roofs are not intrusive to the communities, regardless of residential or commercial.

Chair Kirby commented that we cannot legislate what the homeowner associations do.

Planner van der Zwaag then discussed the slide containing the draft application recommendations for residential.

## ☰ DRAFT APPLICATION RECOMMENDATIONS

### RESIDENTIAL

R.1	Encourage roof installations to be located in an inconspicuous location, such as the back of the house.
R.2	Regulate the manner of installation of rooftop solar panels to have a regular shape and uniform appearance.
R.3	Utilize the permitting and review process to determine appropriateness of installation.
R.4	Make ground-mounted solar a conditional use, and require setbacks and screening as criteria for approval.
R.5	Review building-integrated solar products as building materials.
R.6	Require that new buildings be “solar-ready.”

### ☰ NEW ALBANY ☰

Chair Kirby stated that there will be a real problem with prohibiting them facing the right of way because the panels work best when south facing, are of limited value when facing east or west, and do not work at all when north facing.

Vice-Chair Wallace observed that is the issue, balancing the economics with the aesthetics. He further remarked that homeowners could sell and relocate.

Commission Member Larsen observed that he thought aesthetics will become a big part of this.

Vice-Chair Wallace remarked that some communities require slate roofs and it was unclear how will this impact those or other aesthetic choices.

Commission Member Schell stated that he was concerned about passing this responsibility to the homeowners associations.

Chair Kirby stated that 2/3 of the homeowners associations are under control of New Albany Company and it seems that those associations have it under control. Presently there are only 2 homes that use solar panels. Many of the small homeowners associations restrict it if it is visible from the right of way. And it seemed like the only homes that could use it without restriction would be older homes.

Chair Kirby sought to clarify the meaning of the language of SB 61.

There was discussion of the language of SB 61 and the vagueness regarding complete prohibition and reasonable regulation.

Vice-Chair Wallace observed that in light of the vagueness of the legislative language the time is right to consider regulation.

Chair Kirby raised the issue of geothermal energy and shared geothermal usage. He stated that there are buildings and neighborhood that use and store geothermal energy.



Planning Manager Mayer agreed that geothermal energy usage was a great issue. He further stated that some buildings currently use geothermal energy and indicated that staff would encourage that use and can certainly put that on the list of things to consider.

Chair Kirby also stated that retention ponds are freebies and could be used, he further remarked that during the energy crisis he was given permission to turn his air conditioning up because the consumption was so low.

Planning Manager Mayer stated that we do have an ECOS program for commercial uses to encourage developers; we can add it to the list.

Chair Kirby asked whether the presentation could be sent to him. He stated that he missed the last meeting and would reply with his comments rather than spending committee time making his comments.

Vice-Chair Wallace stated that the committee tabled it last time so Chair Kirby could hear and respond to the presentation.

Commission Member Larsen stated that another way to think about this is to limit usage to commercial and then residential could purchase the stored energy from the commercial usages. He wanted to be sure all options were being considered.

Chair Kirby asked whether community solar for the Village Center was being considered.

Planning Manager Mayer stated that community solar is something being considered but it is unclear whether there are existing restrictions by AEP and other utilities. Aesthetics and how best to regulate, and then how to best use the existing large flat roofs.

Chair Kirby pointed out that Wal-Mart had figured out how to reap economic benefit by placing panels on their roofs.

Commission Member Larsen reiterated that it would be great to use the large flat roofs in the business park to gather and store the energy for use in the rest of the city.

Planner van der Zwaag said that the commission comments were very helpful. She thanked the commission and stated that she will be collating all of the comments and would be happy to send comments from all the boards and commissions visited.

Planning Manager Mayer thanked the commission and stated that staff review the comments for overlap and then condensing those for recommendations. He further stated that he welcomed any ideas or comments on the recommendations that arose following this meeting.

Chair Kirby confirmed that staff was looking for feedback rather than an approval.

Planning Manager Mayer responded yes, we are seeking feedback on the recommendations.

#### **VIII. Poll members for comment**

Chair Kirby polled the members for comment.

There was no response.

#### **IX. Adjournment**

Without objection, Chair Kirby adjourned the meeting at 8:45 p.m.  
Submitted by Christina Madriguera, Esq., Deputy Clerk.

**Appendix**

**FPL-20-2023  
Staff Report  
Record of Action**

DRAFT



**Planning Commission Staff Report  
March 6, 2023 Meeting**

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**ALDEN WOODS  
PRELIMINARY & FINAL PLAT**

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LOCATION: 6700, 6770, 6800 Central College Road (PID: 222-001997, 222-001998 and 222-001999).  
APPLICANT: Andrew Maletz  
REQUEST: Preliminary & Final Plat  
ZONING: Alden Woods: Limited Suburban Single-Family Residential District (L-R-4)  
STRATEGIC PLAN: Residential District  
APPLICATION: FPL-20-2023

Review based on: Application materials received on February 3, 2023 and February 21, 2023.

*Staff report completed by Chelsea Nichols, Planner.*

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**I. REQUEST AND BACKGROUND**

The application is for a final plat for a new subdivision to be known as “Alden Woods”. The proposed subdivision consists of 9 traditional single-family lots, as well as three reserves (A-C), and one new public street. The subdivision is zoned Limited Suburban Single-Family Residential District (L-R-4).

City Council reviewed and approved the rezoning application for this subdivision during their meeting on October 18, 2022 (O-30-2022). The approved zoning text contains requirements for open space and parkland within the subdivision.

**II. SITE DESCRIPTION & USE**

The 8.83+/- acre zoning area is located in Franklin County and is made up of three properties. Each lot contains a single-family home. The site is located on the north side of Central College Road. The site is located generally east of New Albany Condit Road, generally west of the Wentworth Crossing subdivision, and generally south of the Courtyards at New Albany subdivision.

**III. PLAN REVIEW**

Planning Commission’s review authority of the final plat is found under C.O. Section 1187. Upon review of the final plat, the Commission is to make recommendation to City Council. Staff’s review is based on New Albany plans and studies, zoning text, and zoning regulations. Primary concerns and issues have been indicated below, with needed action or recommended action in underlined text.

- The final plat is consistent with the approved Alden Woods zoning text. The plat shows 9 new residential lots. The proposed lot layout and dimensions match what was shown on the zoning exhibit and meet the requirements of the zoning text.
- New Albany’s Codified Ordinance requires that 2,400 square feet per home be dedicated as park land and 20% of the total acreage in the subdivision shall be dedicated as open space. For this development the total required park land and open space is 2.26 acres. The applicant is providing three reserve areas that will consist of either open space or parkland, totaling 2.39

acres. Per C.O. 1187.16 wet and dry stormwater basins shall not be considered open space. The proposed amounts meet the Codified Ordinance requirements and the applicant is exceeding the required amount of open space dedication.

- The three (3) reserve areas are shown as Reserves “A”, “B”, and “C”, on the plat According to the text, Reserves “A”, “B”, and “C” shall be owned by the City of New Albany and maintained by the homeowner’s association in perpetuity for the purpose of open space and/or stormwater retention. Reserve C will serve as the parkland and contain playground amenities.
- The plat creates one (1) new publicly dedicated street. The new street meets requirements as described in the zoning text:
  - The final plat for the subdivision dedicates to the city of 50 feet of right-of-way to provide for a curbed public street going northward into the development from Central College Road with a loop configuration.
  - The final plat for the subdivision dedicates to the city of 50 feet of right-of-way to provide for the future extension of the new public street westward from the loop street to the western boundary line of this proposed subdivision.
    - Per the zoning text, the developer of this zoning district shall be required to construct the extension for a distance of 10 feet from the western edge of pavement of the loop street. A sign shall be installed at the end of this 10-foot stub which indicates that it may be extended in the future as a through street. The design of such signage shall be subject to staff approval. This shall be reviewed by city staff during the engineering plan review.
  - The text requires the developer to dedicate 40 feet of right-of-way from the centerline of Central College Road.
- Per the city’s subdivision regulations, C.O. 1187.04, all new streets shall be named and shall be subject to the approval of the Planning Commission. The applicant’s proposed name for the new street is “Woodview Drive”.
- The final plat appropriately shows the proposed lot width to be at least 80 feet and at least 45 feet on a curving street, as required by the R-4 zoning district.
- The final plat appropriately shows the lots to be at least 10,400 square feet, as required by the R-4 zoning district.
- The final plat appropriately shows 30’ front and rear yard setbacks, as required by the R-4 zoning district.
- The text states that a buffer zone shall be provided for a distance of 30 feet from all perimeter boundaries of the site which are not adjacent to Central College Road. Within the buffer zones, existing trees of one caliper inch or more in diameter as measured three feet above grade shall be maintained. No structures, pavement, patios, decks, pools, playsets, or other permanent improvements shall be permitted in the buffer zone, except a fence along rear lot lines may be permitted in accordance with the Codified Ordinances. Understory may be removed within the tree preservation and such area may be grassed or remain in its natural condition.
  - While the buffer zone is indicated on the plat, there is no note on the plat that described these requirements. Staff recommends that it be a condition of approval that a note is added to the plat to reflect the language from the zoning text stating, “A buffer zone shall be provided for a distance of 30 feet from all perimeter boundaries of the site which are not adjacent to Central College Road. Within the buffer zones, existing trees of one caliper inch or more in diameter as measured three feet above grade shall be preserved and maintained. No structures, pavement, patios, decks, pools, playsets, or other permanent improvements shall be permitted in the buffer zone, except a fence along rear lot lines may be permitted in accordance with the Codified Ordinances. Understory may be removed within the buffer zone and such area may be grassed or remain in its natural condition Trees within the buffer zone may be trimmed, cut, or removed if they are diseased, dead, or of a noxious species or if they present a threat of danger to persons or property. The installation, operation and maintenance of utility and drainage facilities for the development shall be permitted. Utility maintenance within said buffer areas shall occur only in easement areas designated on the plat unless otherwise approved by the city

engineer. The owner of each lot shall maintain the portion of the buffer area that falls within the limits of their lots.”

- In addition, there are two trees identified on the plat as a 36” tree and a 48” tree that are to remain and shall not be removed by the developer and/or property owner without permission by city staff. These restrictions are included as a note on the plat.

#### **IV. ENGINEER’S COMMENTS**

The City Engineer has reviewed the referenced plan in accordance with the engineering related requirements of Code Section 1159.07(b)(3) and provided the following comments. Staff recommends a condition of approval that these comments be addressed, subject to staff approval.

1. Refer to Exhibit A. Revise sheet 1 of the referenced plat to match all signature and note blocks, including the Drainage Easement note block, as shown on sheet 1 of Exhibit A.
2. Show all of Reserve A as lying within a drainage easement.
3. Refer to sheet 2 of Exhibit A. Consistent with the previously platted subdivision located across the street from the referenced subdivision, provide a minimum right-of-way dedication of 40’ as measured from road centerline along the referenced subdivision’s frontage.
4. Refer to Exhibit B. Add the Buffer Zone note block and other applicable note blocks to the referenced plat.
5. Label the Instrument No. for the existing sanitary sewer easement shown on the plat.
6. Remove the note “As It Now Exists” beneath the Future Street label.
7. Change the label of the 20’ Storm Easement (Lot 1,2, 3 and 4) shown on the referenced plat to 20’ Drainage Easement.
8. Note that the Drainage Easement shown on the referenced plat within Reserve B doesn’t match sheet C-200 provided with the construction plans. Please advise.
9. In accordance with Code Sections 1187.06 Sections (c)(1) and (c)(2), we recommend that the applicant provide evidence that OEPA and ACOE permits are not required to allow construction.
10. We recommend that the applicant have the area to be re-platted reviewed by the Franklin County Engineer’s office and a summary of County Engineer review comments and the applicant’s comment responses be provided for our records.

#### **V. SUMMARY**

The final plat is generally consistent with the zoning exhibit plan and meets code requirements.

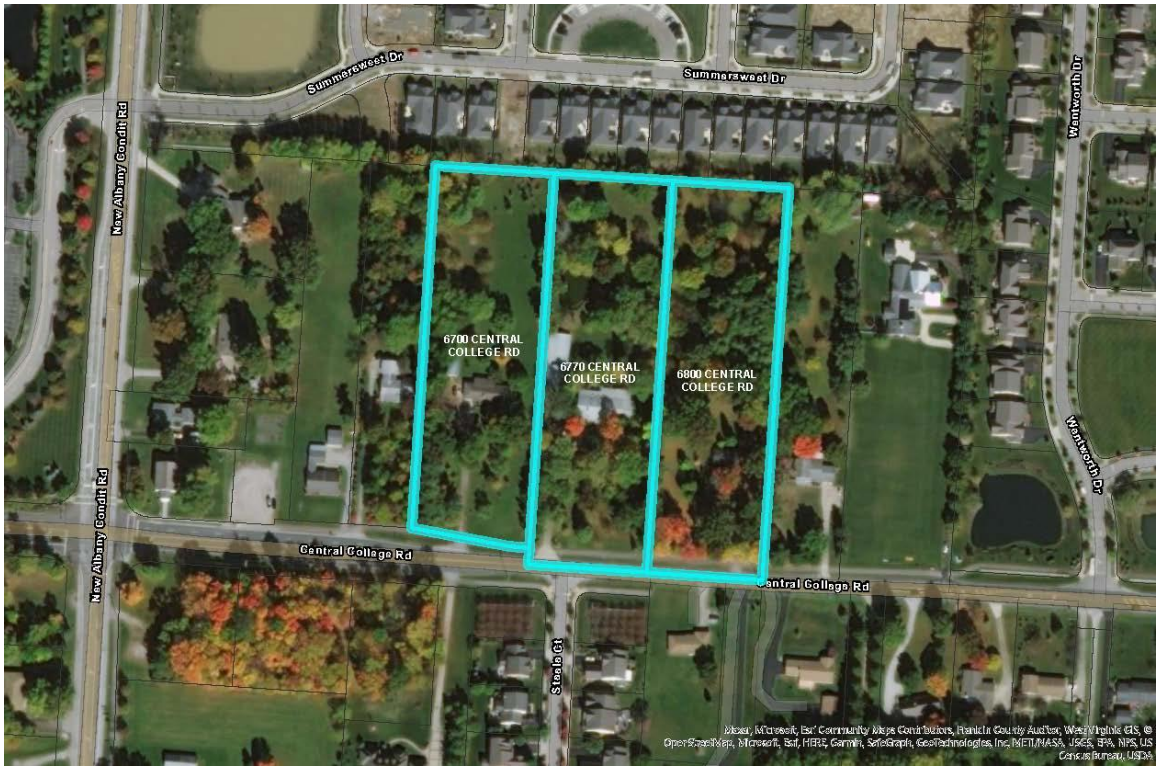
#### **VI. ACTION**

##### **Suggested Motion for FPL-20-2023:**

Move to approve the preliminary plat and final plat application FPL-20-2023 with the following condition.

1. The city engineer comments must be addressed, subject to staff approval;
2. The plat shall be amended to include a note regarding the buffer zone that matches city staff’s suggested language in this staff report, subject to staff approval.

**Approximate Site Location:**



Source: Google Earth



## Community Development Department

RE: City of New Albany Board and Commission Record of Action

Dear Andrew Maletz,

Attached is the Record of Action for your recent application that was heard by one of the City of New Albany Boards and Commissions. Please retain this document for your records.

This Record of Action does not constitute a permit or license to construct, demolish, occupy or make alterations to any land area or building. A building and/or zoning permit is required before any work can be performed. For more information on the permitting process, please contact the Community Development Department.

Additionally, if the Record of Action lists conditions of approval these conditions must be met prior to issuance of any zoning or building permits.

Please contact our office at (614) 939-2254 with any questions.

Thank you.



## Community Development Department

### Decision and Record of Action

Tuesday, March 07, 2023

The New Albany Planning Commission took the following action on 03/06/2023 .

#### Final Plat

**Location:** 6770 CENTRAL COLLEGE RD, 6800 CENTRAL COLLEGE RD, 6700 CENTRAL COLLEGE RD

**Applicant:** Andrew Maletz,

**Application:** PLFPL20230020

**Request:** Review and approval of the preliminary and final plat for Alden Woods.

**Motion:** To approve PLFPL20230020 with conditions.

**Commission Vote:** Motion Approved with Conditions, 5-0

**Result:** PLFPL20230020 was Approved with Conditions, by a vote of 5-0.

Recorded in the Official Journal this March 07, 2023

#### Condition(s) of Approval:

1. The city engineer comments regarding the final plat must be addressed, subject to staff approval;
2. The plat shall be amended to include a note regarding the buffer zone that matches city staff's suggested language in this staff report, subject to staff approval;
3. Sidewalks from the public 5-foot-wide sidewalk to the houses is encouraged; and
4. The sales documents shall prominently note the 30' buffer zone requirements.

Staff Certification:

*Chelsea Nichols*

Chelsea Nichols  
Planner





**Planning Commission Staff Report  
March 20, 2023 Meeting**

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**TAYLOR FARM PARK  
FLOODPLAIN VARIANCE**

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LOCATION: Taylor Farm Park (PID: 222-005165)  
APPLICANT: City of New Albany  
REQUEST: (A) Variance to C.O. 1154.04(e)(2) to allow a new restroom facility, existing barn and chicken house to be placed at an elevation that is not 2 feet above the “base flood elevation” and not include dry flood proofing measures as required by city code.  
ZONING: Agricultural (AG)  
STRATEGIC PLAN: Parks and Green Space  
APPLICATION: VAR-27-2023

Review based on: Application materials received on February 23, 2023.

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*Staff report prepared by Chris Christian, Planner II.*

**I. REQUEST AND BACKGROUND**

The applicant requests the following variance as part of the Taylor Farm Park improvement project.

(A) Variance to C.O. 1154.04(e)(2) to allow a new restroom facility, existing barn and chicken house to be placed at an elevation that is not 2 feet above the “base flood elevation” and not include dry flood proofing measures as required by city code.

**II. SITE DESCRIPTION & USE**

Taylor Farm Park is located on the far western corporate boundary that is shared with the city of Columbus along Dublin Granville Road. The site contains an existing historic home, summer kitchen, garage, chicken house, barn and parking lot. The Rocky Fork Creek runs along the western property line of the site.

**III. EVALUATION**

The application complies with the submittal requirements in C.O. 1113.03, and is considered complete. The property owners within 200 feet of the property in question have been notified.

***Criteria***

The standard for granting of an area variance is set forth in the case of *Duncan v. Village of Middlefield*, 23 Ohio St.3d 83 (1986). The Board must examine the following factors when deciding whether to grant a landowner an area variance:

All of the factors should be considered and no single factor is dispositive. The key to whether an area variance should be granted to a property owner under the “practical difficulties” standard is whether the area zoning requirement, as applied to the property owner in question, is reasonable and practical.

1. *Whether the property will yield a reasonable return or whether there can be a beneficial use of the property without the variance.*
2. *Whether the variance is substantial.*
3. *Whether the essential character of the neighborhood would be substantially altered or adjoining properties suffer a “substantial detriment.”*
4. *Whether the variance would adversely affect the delivery of government services.*
5. *Whether the property owner purchased the property with knowledge of the zoning restriction.*
6. *Whether the problem can be solved by some manner other than the granting of a variance.*
7. *Whether the variance preserves the “spirit and intent” of the zoning requirement and whether “substantial justice” would be done by granting the variance.*

Plus, the following criteria as established in the zoning code (*Section 1113.06*):

8. *That special conditions and circumstances exist which are peculiar to the land or structure involved and which are not applicable to other lands or structures in the same zoning district.*
9. *That a literal interpretation of the provisions of the Zoning Ordinance would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district under the terms of the Zoning Ordinance.*
10. *That the special conditions and circumstances do not result from the action of the applicant.*
11. *That granting the variance requested will not confer on the applicant any special privilege that is denied by the Zoning Ordinance to other lands or structures in the same zoning district.*
12. *That granting the variance will not adversely affect the health and safety of persons residing or working in the vicinity of the proposed development, be materially detrimental to the public welfare, or injurious to private property or public improvements in the vicinity.*

## **Considerations and Basis for Decision**

### **(A) Variance to C.O. 1154.04(e)(2) to allow a new restroom facility, existing barn and chicken house to be placed at an elevation that is not 2 feet above the “base flood elevation” and not include dry flood proofing measures as required by city code.**

The following should be considered in the Commission’s decision:

1. The proposed and existing buildings are located on a nearly 100-acre tract of land being developed as the Taylor Farm Park. Historically, the site had been used as a farm dating back to the 1800s and contains several existing buildings. The Rocky Fork Creek runs along the western boundary of the site. The 100-year floodplain of the creek takes up a large amount of ground on the site, limiting the type and intensity of development that may occur. There are several layers of regulations related to the floodplain on the site including those found in the Flood Damage Reduction section of New Albany city code (C.O. 1155).
2. The city’s intent for the property is to preserve the existing character of the site, paying homage to the rural character of New Albany while adding amenities to the site so it can be used as a city park. The city hired consultants to evaluate the state of the existing structures and to study the existing character of the creek corridor to accomplish the intent of the project while protecting and preserving these integral elements of the site. The city wishes to restore the existing barn and chicken house as well as add a new restroom facility to support the park. In order to accomplish this, a variance is necessary and further described below. EMH&T, the city floodplain consultant for the project, submitted a floodplain model, report and additional supporting documents for the variance request. This information is included in the staff report evaluation and the meeting packet.

3. C.O. 1154.04(e)(2) requires nonresidential structures to be elevated to or above the flood protection elevation. C.O. 1155 defines the flood protection elevation (FPE) as the base flood elevation plus two feet of freeboard. The base flood elevation means the area having a one percent chance of being equaled or exceeded in any given year. The base flood elevation may also be referred to as the one percent chance annual flood or one-hundred (100) year flood.
4. In addition, the code requires nonresidential structures to be dry floodproofed so that the structure is watertight with walls substantially impermeable to the passage of water. The applicant is requesting a variance to eliminate these requirements for the new restroom facility, existing barn and chicken house.
5. The variance request does not appear to be substantial. While the new and existing buildings will not be elevated to the FPE nor contain dry proofing measures, the structures will be elevated to be above the 100-year flood elevation in conformance with the National Flood Insurance Program (NFIP), consistent with federal regulations. In addition, the proposed and existing buildings are meeting all other regulations and requirements of the city flood plain code and will not increase the Rocky Fork flood elevation levels.
6. It does not appear that the essential character of the neighborhood will be altered if the variance request is granted. The intent of this city project is to preserve the character of the property, paying homage to the rural character of New Albany while allowing the site to serve as a city park. The restoration of these existing structures and addition of the restroom facility contribute to this goal.
7. If the variance is not granted and the buildings are required to be raised to the FPE, additional fill must be placed within the floodplain for compensatory storage. As demonstrated in the submittal materials, there is little additional area adjacent to the creek to provide such storage. Additional area could be provided however it would require additional disturbance to the creek corridor including removing existing vegetation. These efforts would compromise the existing character of the area and not meet the intent of the project.
8. It appears that there are special conditions and circumstances that do not result from action of the applicant and justify the variance request. The existing code regulations do not consider historic buildings which are desired to be restored or ancillary restroom facilities designed to complement and support a public park. The existing and proposed buildings are considered to be “nonresidential structures” which may also include more substantial development such as office buildings, retail buildings or another commercial use.
9. The regulations within this section only appear to consider buildings where there may be a larger number of people using them, on a more frequent basis, and are meant to provide additional protection in these circumstances. The existing and proposed buildings on the site are ancillary in nature and will not be used for frequent or regular human habitation. In addition, if a 100-year flood even occurs on the property the city has control to close the buildings if necessary.
10. It does not appear that the variance would adversely affect the delivery of government services, affect the health and safety of persons residing or working in the vicinity of the proposed development, be materially detrimental to the public welfare, or injurious to private property or public improvements in the vicinity.

**C.O. 1155.05(c) states that in addition to the criteria for granting variances set forth in C.O. 1113, a variance to the city’s floodplain regulations shall only be issued upon:**

1. *A showing of good and sufficient cause.*  
The proposed and existing buildings meet all other requirements of the city floodplain code with the exception of this variance request. The buildings will be elevated to meet the minimum NFIP regulations, above the 100-year flood elevation as demonstrated below:

- a. 100-year flood elevation at proposed building location: EL 957.0
  - b. Lowest adjacent grade to proposed building: EL 957.02
  - c. Finished floor elevation of proposed building: EL 957.50
2. *A determination that failure to grant the variance would result in exceptional hardship due to the physical characteristics of the property. Increased cost or inconvenience of meeting the requirements of these regulations does not constitute an exceptional hardship to the applicant.*
- a. Elevating the new and existing buildings to be a minimum of 2 feet above the 100-year floodplain elevation could require up to 1,750 additional cubic yards of fill within the floodplain, requiring additional excavation of 1,837.50 cubic yards for compensatory storage. The current grading plan indicated there is little additional area adjacent to the Rocky Fork Creek to provide excavation for additional compensatory storage, within the project limits.
  - b. Elevating the proposed buildings to the FPE by utilizing ramps and/or stairs in-lieu of additional fill would impact the ability to provide equal, intuitive, and convenient access to and between the proposed building, existing buildings, and the community gardens. Along with impacts to accessibility, additional ramps and stairs would be incompatible with the characteristics of the existing rural character and agrarian aesthetic of the buildings and site.
  - c. Dry flood proofing the proposed restroom building and the existing structures would require the use of a flood gate closure of doors to these buildings. A typical flood gate door closure would require mobilization and installation of the closure in advance of a flood event, then removal of the closure to reestablish use of the facility. In addition, these materials would need to be stored nearby and periodic test closures would be required. The door gate closures would eventually need to be replaced. The additional flood damage reduction benefits to the buildings beyond what is currently proposed and described under item is minimal.
3. *A determination that the granting of a variance will not result in increased flood heights beyond that which is allowed in these regulations; additional threats to public safety; extraordinary public expense, nuisances, fraud on or victimization of the public, or conflict with existing local laws.*
- a. A detailed floodplain model has been prepared to represent the proposed grading associated with the project, including the fill and excavation for compensatory storage. Attached is a separate report documenting the outcome of that modeling, which has determined the proposed project will not increase 100-year flood elevations along Rocky Fork Creek. This information is included in the meeting packet.
4. *A determination that the structure or other development is protected by methods to minimize flood damages.*
- a. The exterior walls of the restroom facility and the existing buildings will be constructed from Concrete Masonry Units, or similar, to an elevation above the FPE. These walls will be designed to withstand hydrostatic and hydrodynamic loading in the rare instance there is a flood exceeding a 100-year event.
  - b. Water and sewer services located within the restroom facility will be elevated above the FPE or will be sealed to be water-tight where below the FPE.
  - c. The termination of electrical services within the restroom facility will be elevated above the FPE.
  - d. Flood vents will be provided in the walls of the restroom facility and the existing structures to allow for the free movement of flood waters into and out of the building and reduce the hydrostatic and hydrodynamic loading to the buildings. The flood

vents will be designed in accordance with Code Section 1155.04 (d)(7) C., or otherwise meet minimum NFIP standards.

5. *A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.*
  - a. The proposed improvements will be designed and constructed in compliance with the city flood code, with the only exception of the proposed restroom facility and the substantial improvement of the chicken house and barn structure not meeting the FPE requirement. These buildings will be flood protected in conformance with minimum NFIP requirements and additional flood resistance measures will be applied above the 100-year flood elevation. As such, the requested variance is the minimum necessary given the documented hardships.

**Plus these other conditions for variances found in C.O. 1155.05(d):**

1. *Variances shall not be issued within any designated floodway if any increase in flood levels during the case flood discharge would result.*
  - a. The proposed project will not increase 100-year flood elevations along Rocky Fork Creek as demonstrated in a model and associated report which are included in the meeting packet.
2. *Generally, variances may be issued for substantial improvements to be erected on a lot of one-half (1.5) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level. As the lot size increases beyond one-half (1.5) acre, the technical justification required for issuing the variance increases.*
  - a. A substantial, 263 page report has been completed for the project which and used as the basis for justification of the variance request. This report is included in the meeting packet and concludes that the project will not increase the Rocky Fork flood elevation levels.
3. *Any applicant to whom a variance is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation and the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.*
  - a. While the existing and proposed buildings will not be placed at or above the flood protection elevation, they are to be placed above the 100-year flood elevation meeting the minimum National Flood Insurance Program requirements and federal regulations.

**III. SUMMARY**

The intent of Taylor Farm Park is to preserve and protect the existing character of the nearly 100-acre tract of land while allowing the site to be used as a public park, providing a benefit to the community. The city is meeting the goals of the project by hiring outside consultants to evaluate the condition of the existing buildings on the site, restoring them and adding a small restroom facility to support the park while being sensitive to the large floodplain on the property.

The variance request meets the intent of the project. While the existing and proposed buildings will not be elevated to the FPE or include dry proofing measures, the improvements meet all other city flood code regulations, are not to be used for regular human habitation and will not increase the flood elevation, therefore the variance is not substantial. Elevating the structures to meet this requirement would necessitate additional fill to be placed along the Rocky Fork Creek. In order to provide this fill, additional area around the creek would need to be excavated and disturb the existing natural, heavily vegetated stream corridor compromising the intent of the project.

#### IV. ACTION

Should the Planning Commission find that the application has sufficient basis for approval, the following motion would be appropriate (The Planning Commission can make one motion for all variances or separate motions for each variance request):

**Move to approve application VAR-27-2023.**

#### Approximate Site Location:



Source: NearMap



Permit # \_\_\_\_\_  
 Board \_\_\_\_\_  
 Mtg. Date \_\_\_\_\_



**Community Development Planning Application**

Project Information	Site Address <u>N/A</u> Parcel Numbers <u>222 - 005165</u> Acres <u>10.26 Ac.</u> # of lots created <u>N/A</u>																																																											
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Choose Application Type</th> <th colspan="4" style="text-align: center;">Circle all Details that Apply</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Appeal</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Certificate of Appropriateness</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Conditional Use</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Development Plan</td> <td>Preliminary</td> <td>Final</td> <td>Comprehensive</td> <td>Amendment</td> </tr> <tr> <td><input type="checkbox"/> Plat</td> <td>Preliminary</td> <td>Final</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Lot Changes</td> <td>Combination</td> <td>Split</td> <td>Adjustment</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Minor Commercial Subdivision</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Vacation</td> <td>Easement</td> <td></td> <td>Street</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Variance</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Extension Request</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/> Zoning</td> <td>Amendment (rezoning)</td> <td></td> <td>Text Modification</td> <td></td> </tr> </tbody> </table>	Choose Application Type	Circle all Details that Apply				<input type="checkbox"/> Appeal					<input type="checkbox"/> Certificate of Appropriateness					<input type="checkbox"/> Conditional Use					<input type="checkbox"/> Development Plan	Preliminary	Final	Comprehensive	Amendment	<input type="checkbox"/> Plat	Preliminary	Final			<input type="checkbox"/> Lot Changes	Combination	Split	Adjustment		<input type="checkbox"/> Minor Commercial Subdivision					<input checked="" type="checkbox"/> Vacation	Easement		Street		<input checked="" type="checkbox"/> Variance					<input type="checkbox"/> Extension Request					<input type="checkbox"/> Zoning	Amendment (rezoning)		Text Modification
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Description of Request: <u>Request for a variance from Section 1155.04(e) of the City's codified ordinances. The variance is related to a new non-residential building and substantial improvements to two existing buildings within the 100-year floodplain.</u>																																																												
Contacts	Property Owner's Name: <u>Michael Barker, Director of Public Service</u> Address: <u>City of New Albany 99 W. Main Street</u> City, State, Zip: <u>New Albany, OH 43054</u> Phone number: <u>(614) 939-2230</u> Fax: <u>(614) 939-2234</u> Email: <u>mbarker@newalbanyohio.org</u>																																																											
	Applicant's Name: <u>Miles F. Herbert</u> Address: <u>EMH&amp;T 5500 New Albany Road</u> City, State, Zip: <u>Columbus, OH 43054</u> Phone number: <u>(614) 775-4205</u> Fax: <u>---</u> Email: <u>mherbert@emh&amp;t.com</u>																																																											
Signature	<p>Site visits to the property by City of New Albany representatives are essential to process this application. The Owner/Applicant, as signed below, hereby authorizes Village of New Albany representatives, employees and appointed and elected officials to visit, photograph and post a notice on the property described in this application. I certify that the information here within and attached to this application is true, correct and complete.</p>																																																											
	Signature of Owner: <u>Joseph Stefaniga</u> Date: <u>3/1/23</u> Signature of Applicant: <u>Miles F. Herbert</u> Date: <u>2/27/2023</u>																																																											

## 10.258 ACRES

Situate in the State of Ohio, County of Franklin, City of New Albany, lying in Farm Lot 7, Quarter Township 3, Township 2, Range 16, United States Military District, and part of that 96.826 acre tract conveyed to The New Albany Company LLC by deed of record in Instrument Number 202004020045213, (all references are to the records of the Recorder's Office, Franklin County, Ohio) being more particularly described as follows:

Beginning, for reference, at a magnetic nail set at the centerline intersection of Dublin-Granville Road (I.C.H. 546 Section C2 & New Albany) (FRA-161-18.91) with Harlem Road (Road Record 8, Page 253), being South  $08^{\circ}13'15''$  East, a distance of 2.10 feet from Franklin County Geodetic Survey monument number 6022 found at the intersection of the centerline of said Harlem Road with the tangent to a curve in the centerline of said Dublin-Granville Road and being South  $83^{\circ}05'18''$  West, a distance of 5.83 feet from P.I. Sta. 175+09.27 as reference on said I.C.H. 546 plan set, said reference point of beginning being the southeasterly corner of the remainder of that tract conveyed to William T. Taylor by deed of record in Deed Book 160, Page 239;

Thence with the centerline of said Dublin-Granville Road, the southerly line of said William T. Taylor tract and said 96.826 acre tract, with the arc of a curve to the left, having a central angle of  $00^{\circ}57'39''$ , a radius of 14191.83 feet, an arc length of 237.99 feet, a chord bearing of South  $83^{\circ}34'08''$  West and chord distance of 237.99 feet to a magnetic nail set at a point of tangency;

Thence South  $83^{\circ}05'18''$  West, with the centerline of said Dublin-Granville Road, the southerly line of said 96.826 acre tract, a distance of 1792.99 feet to a magnetic nail set at the TRUE POINT OF BEGINNING;

Thence South  $83^{\circ}05'18''$  West, with said centerline, said southerly line, a distance of 600.55 feet to a magnetic nail set at the common corner of said 96.826 acre tract and that 21.610 acre tract conveyed to the City of Columbus, Ohio by deed of record in Instrument Number 201808010102609;

Thence with the line common to said 96.826 and 21.610 acre tracts, the following courses and distances:

North  $16^{\circ}54'39''$  West, a distance of 709.98 feet to an iron pin set; and

North  $74^{\circ}35'21''$  East, a distance of 115.50 feet to an iron pin set;

Thence across said 96.826 acre tract, the following courses and distances:

South  $76^{\circ}06'04''$  East, a distance of 178.72 feet to an iron pin set;

North  $87^{\circ}05'48''$  East, a distance of 484.63 feet to an iron pin set; and

South  $03^{\circ}07'45''$  East, a distance of 620.25 feet to the TRUE POINT OF BEGINNING, containing 10.258 acres, more or less, of which 0.500 acre is within the current right-of-way of said Dublin-Granville Road.

Subject, however, to all legal rights-of-way and/or easements, if any, of previous record.

Iron pins set, where indicated, are iron pipes, thirteen sixteenths ( $13/16$ ) inch inside diameter, thirty (30) inches long with a plastic plug placed in the top bearing the initials EMHT INC.

The bearings herein are based on the Ohio State Plane Coordinate System, South Zone, NAD83 (2007). Said bearings originated from a field traverse which was tied (referenced) to said coordinate system by GPS observations of Franklin County Engineering Department monuments FRANK 78, FCGS 8815, FCGS 8814, FCGS 8813, FCGS 6624 RESET and FCGS 6675. The



10.258 ACRES

-2-

portion of the centerline of Dublin-Granville Road, having a bearing of South 83° 05' 18" West and monumented as shown hereon, is designated as the "basis of bearings" for this survey.

This survey was prepared using documents of record, prior plats of survey, and observed evidence located by an actual field survey.



EVANS, MECHWART, HAMBLETON & TILTON, INC.

A handwritten signature in black ink that reads "Heather L. King".


5/26/21

Heather L. King  
Professional Surveyor No. 8307

Date

HLK  
10\_258 ac 20210443-VS-BNDY-01

**PRELIMINARY APPROVAL**  
Cornell R. Robertson, P.E., P.S.  
BY: *ajstuart*  
05/26/2021



**PENDING ORIGINALS**  
\*Submitted via digital format

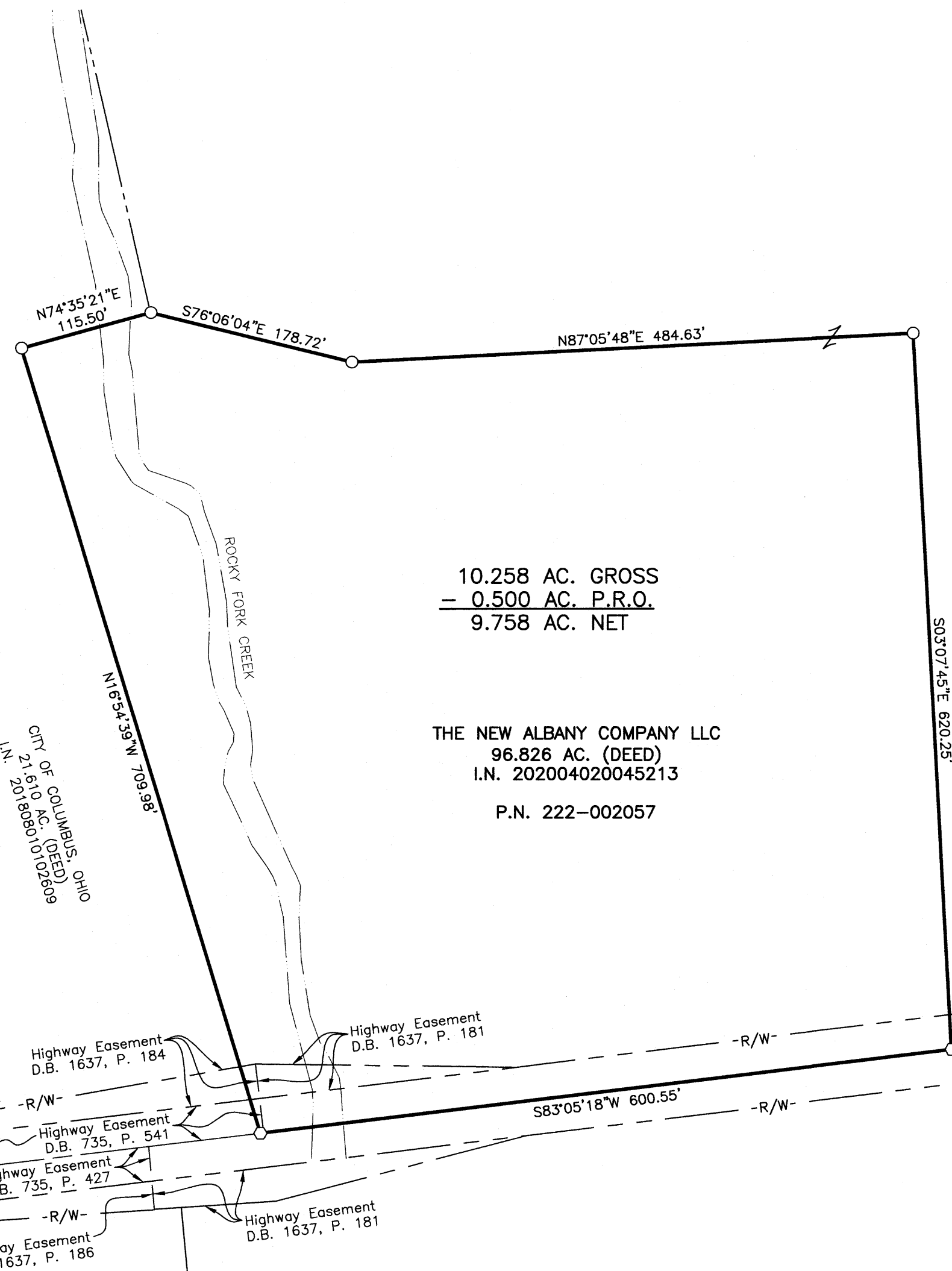
*Please return this approval, along with the original description and plat of survey, as prepared by the surveyor, signed, sealed and dated in blue ink.*

# SURVEY OF ACREAGE PARCEL

## FARM LOT 7, QUARTER TOWNSHIP 3, TOWNSHIP 2, RANGE 16

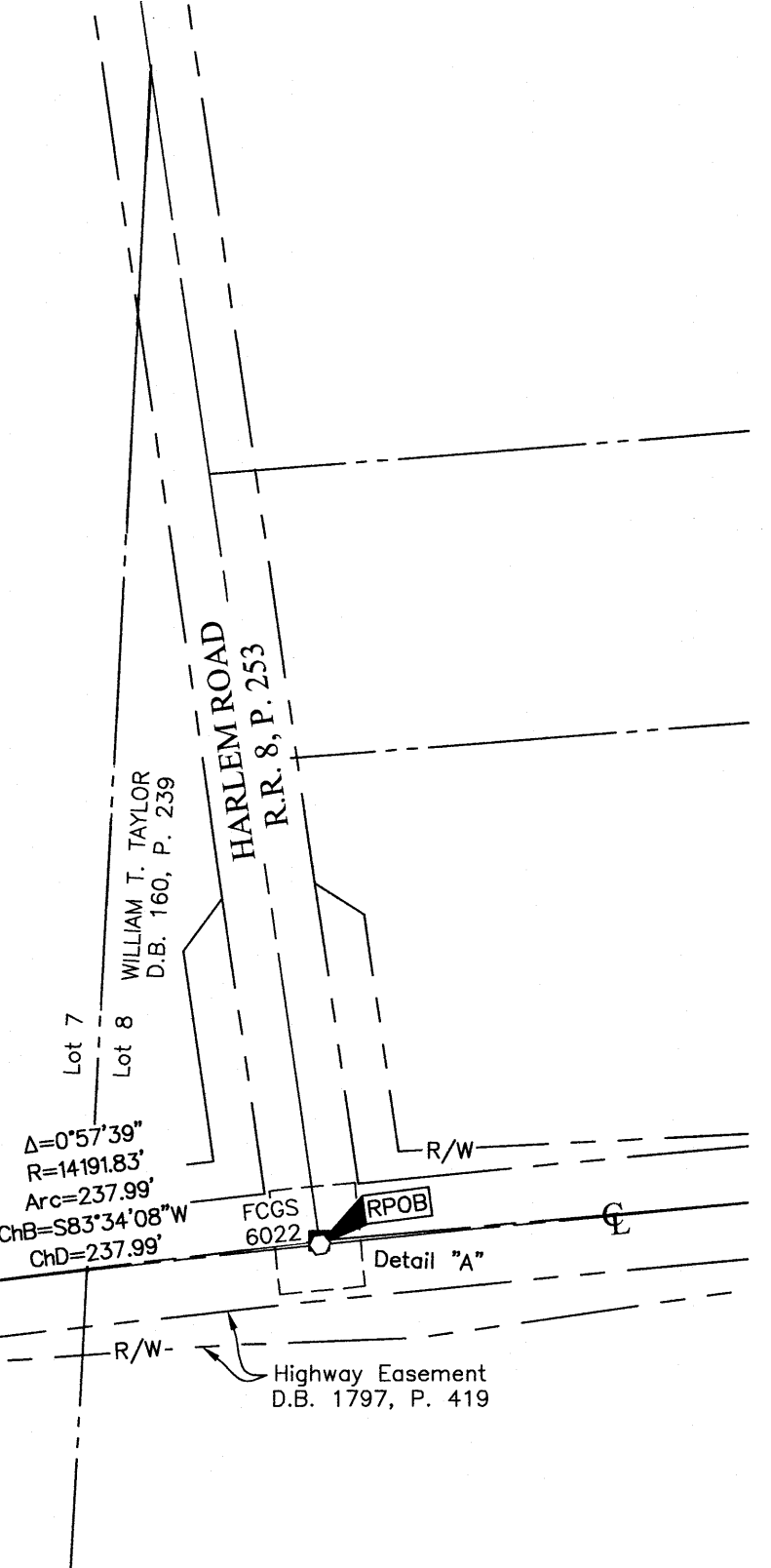
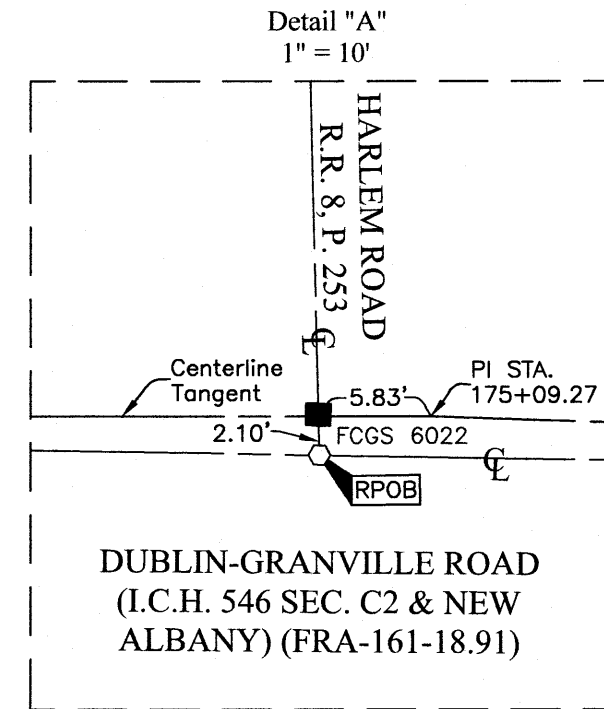
### UNITED STATES MILITARY DISTRICT

### CITY OF NEW ALBANY, COUNTY OF FRANKLIN, STATE OF OHIO



10.258 AC. GROSS  
 = 0.500 AC. P.R.O.  
 9.758 AC. NET

THE NEW ALBANY COMPANY LLC  
 96.826 AC. (DEED)  
 I.N. 202004020045213  
 P.N. 222-002057



C:\OHIO\1\PROJECT\1\20210443\DWG\ASSETS\BOUNDARY\_20210443-VS-BNDY-01.DWG plotted by WEBB, TEAGUE on 6/1/2021 1:16:40 PM last saved by TWBB on 6/1/2021 1:16:13 PM

- = STONE FND.
- = MON. FND.
- = I.P. FND.
- = I.P. SET
- = MAG. NAIL FND.
- = MAG. NAIL SET
- ▲ = R.R. SPK. FND.
- ◆ = P.K. NAIL FND.

I.P. Set are 13/16" I.D. iron pipes 30" long with cap inscribed EMHT INC.

**BASIS OF BEARINGS:**  
 The bearings shown hereon are based on the Ohio State Plane Coordinate System, South Zone, NAD83 (2007). Said bearings originated from a field traverse which was tied (referenced) to said coordinate system by GPS observations of Franklin County Engineering Department monuments FRANK 78, FCGS 8815, FCGS 8814, FCGS 8813, FCGS 6624 RESET and FCGS 6675. The portion of the centerline of Dublin-Granville Road, having a bearing of South 83° 05' 18" West and monumented as shown hereon, is designated as the "basis of bearings" for this survey.

**SURVEY NOTE:**  
 This survey was prepared using documents of record, prior plats of survey, and observed evidence located by an actual field survey.



*Heather L. King*  
 Heather L. King  
 Professional Surveyor No. 8307  
 hking@emht.com

*5/26/21*  
 Date

<b>EMHT</b> <small>Evans, Mechwart, Hambleton &amp; Tilton, Inc.                  Engineers • Surveyors • Planners • Scientists                  5500 New Albany Road, Columbus, OH 43054                  Phone: 614.775.4500 Toll Free: 888.775.3648                  emht.com</small>	Date: May 25, 2021	
	Scale: 1" = 100'	
	Job No: 2021-0443	
	Sheet: 1 of 1	
REVISIONS		
MARK	DATE	DESCRIPTION



Engineers, Surveyors, Planners, Scientists

February 27, 2023

Mr. Neil Kirby, Chairperson  
City of New Albany Planning Commission  
99 W. Main Street  
New Albany, Ohio 43054

Subject: Taylor Farm Park, Phase 2, Application for a Variance from Chapter 1155 of the City's Codified Ordinances

Dear Mr. Kirby:

The City of New Albany is constructing improvements within the floodplain and floodway of Rocky Fork Creek as part of the referenced project. The improvements have been designed in compliance with the City's flood code – Chapter 1155 (Flood Damage Reduction), except for a new building and substantial improvements to two existing buildings. The City is requesting a variance from Section 1155.04(e) of the City's codified ordinances, for the proposed uses listed below. Please note this code section applies specifically to substantial improvements to nonresidential structures, but is also being applied to the proposed new building for the purpose of this variance application.

1. Constructing a new restroom facility to be above the 100-year flood elevation, but not elevating or dry flood proofing the building to the Flood Protection Elevation (100-year flood elevation + 2 feet).
2. Making substantial improvements to the existing chicken house and the barn structure and elevating those buildings to be above the 100-year flood elevation, but not elevating or dry flood proofing the buildings to the Flood Protection Elevation.

The construction of the new building and the substantial improvements to the two existing buildings will be in accordance with minimum National Flood Insurance Program (NFIP) regulations and will use flood resistant materials up to the FPE, as well as providing other measures to reduce the possibility of flood damage to these structures. The attached document describes the hardships with meeting the City's flood code for the new and existing buildings, and addresses the other requirement of pursuing a variance as outlined in Sections 1113.03 and 1155.05 of the City's codified ordinances. Based on the proposed design, there is no additional risk to the City of issuing the variance as requested.

Respectfully Submitted,

A handwritten signature in blue ink that reads "Miles F. Hebert". The signature is written in a cursive, flowing style.

Miles F. Hebert, PE, CFM, LEED Green Associate  
Director, Infrastructure Pursuits

Enclosures: Variance Application Documents

Copies: Mike Barker, Director of Public Service, City of New Albany  
Adrienne Joly, Director of Administrative Service, City of New Albany  
Matt Kellogg, Senior Associate, Landscape Architect, MKSK

Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023

**GENERAL**

The Taylor Farm Park, Phase 2 project is located within the 100-year floodplain and partially within the regulatory floodway of Rocky Fork Creek. The project area is shown on the Flood Insurance Rate Map (FIRM) for Franklin County and Incorporated Areas, Number 390049C, panels 0203 and 0204C, dated June 17, 2008, as shown on Figure 1. This application is made to the City of New Albany's Planning Commission seeking a variance from Section 1155.04(e) of the City's codified ordinances for the two items listed below.

1. A variance allowing the City to **construct a new building** (restroom facility) on fill placed above the 100-year flood elevation, but not to the Flood Protection Elevation (FPE) required by the City's flood code, which is the 100-year flood elevation + 2 feet, and without dry flood proofing measures.
2. A variance allowing the City to **substantially improve the existing chicken house and barn structure** on the property. Both improved structures would be placed on fill to an elevation above the 100-year flood elevation but not to the FPE and will not include dry flood proofing measures.

The proposed Taylor Farm Park, Phase 2 project has been reviewed for compliance with the City's flood code and found to be compliance with this code, except for the proposed elevation of the new restroom building and the substantial improvement of the existing chicken house and barn structure. The new and existing buildings will be elevated to be above the 100-year flood elevation, in conformance with minimum National Flood Insurance Program (NFIP) regulations. The elevation of these building to the FPE on fill, or dry flood proofing the buildings to that elevation, poses a hardship to the City.

Refer to Exhibit 1 for a graphical depiction of the proposed project with respect to the 100-year floodplain and floodway.

The applicable sections of the City's flood code pertaining to this variance are summarized below.

- 1155.02 (Definitions): "Flood protection elevation." The Flood Protection Elevation, or FPE, is the base flood elevation plus two (2) feet of freeboard.
- 1155.04 (Use and Development Standards for Flood Hazard Reduction):

(e) Nonresidential Structures

2. Substantial improvement of existing commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to or above the level of the flood protection elevation; or, together with attendant utility and sanitary facilities, shall meet all of the following standards:
  - a. Be dry flood proofed so that the structure is watertight with walls substantially impermeable to the passage of water to the level of the flood protection elevation.
  - b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and,
  - c. Be certified by a registered professional engineer or architect, through the use of a Federal Emergency Management Agency Flood Proofing Certificate, that the design and methods of construction are in accordance with Section 1155.04(e)(2)A. and B.

The requirements of code section 1155.04(e) is being applied to both the new restroom facility and the substantial improvements to the two existing structures.

Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New  
Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023

**FLOOD CODE COMPLIANCE REVIEW**

This section pertains to the review of the City's flood code with respect to the Taylor Farm Park, Phase 2 project. The project location is within the 100-year floodplain of Rocky Fork Creek and the partially within the regulatory floodway (refer to Exhibit 1). The project includes proposed grading, a community garden, a restroom building, pedestrian trails, parking areas and pedestrian access to Rocky Fork Creek. The proposed grading includes fill within the 100-year floodplain and excavation in the regulatory floodway to achieve the compensatory storage required by the City's flood code.

- **Permissible Use:** The proposed project does not fall into the category of prohibited uses described under code Section 1155.04(a) (i.e., new residential, industrial and commercial development) within the 100-year floodplain. The property is currently zoned for agricultural land use and the proposed land use is for a public park with open space and amenities compatible with the preservation and enhancement of the existing natural condition. City code Section 1155.04 (i)(1) allows activities related to leisure trails and public utilities to occur within the regulatory floodway, and there is no prohibition on providing compensatory storage in the floodway. The proposed project is a permissible use within the 100-year floodplain and floodway.
- **Filling and Grading:** Proposed fill within the 100-year floodplain must be compensated by providing 105% by volume compensatory storage within the floodplain. Based on the current grading plan for the project, there is approximately 5,650 cubic yards of floodplain fill, and approximately 5,960 cubic yards of excavation, meeting the 105% compensatory storage requirement. The proposed excavation for compensatory storage will occur within the floodway and adjacent to the Rocky Fork Creek channel, above the Ordinary High Water Mark (OHWM) and with an unrestricted hydraulic connection to the watercourse. The proposed project meets the compensatory storage requirement.
- **No-Rise Requirement:** Under code Section 1155.04(i)(1), encroachment into the regulatory floodway requires a detailed technical analysis demonstrating a no-rise condition. If the no-rise requirement cannot be met, then a Conditional Letter of Map Revision (CLOMR) from FEMA is required. A detailed floodplain model of Rocky Fork Creek has been prepared to represent the proposed fill and excavation within the 100-year floodplain and floodway and determined the proposed project will not increase 100-year flood elevations, meeting the No-Rise Requirement. A CLOMR will not be required from FEMA in order for the City to issue a floodplain use permit for the project.
- **Other Permits:** Code Section 1155.03(e)(1)B. references environmental permits from the Ohio EPA and US Army Corps of Engineers. The planning and design for the Taylor Farm Park Phase 2 currently does not propose to place fill within or otherwise impact existing wetlands or the Rocky Fork Creek stream channel below the OHWM. No other permits are currently required for the proposed project.
- **Stream Corridor Protection Zone:** Code Section 1155.04(c)(6) discourages fill placed within the Stream Corridor Protection Zone (SCPZ). The proposed project will not place fill within the SCPZ. Other sections of the City's code pertaining to Riparian Corridors do not prohibit the placement of leisure trails and excavation for compensatory volume. Code Section 1171.03 indicates 'floodplain areas should be incorporated into the open spaces and is encouraged to be made publicly accessible'. The Taylor Farm Park project explicitly preserves and enhances floodplain areas for public use and enjoyment. The proposed project meets the SCPZ/riparian corridor protection requirements of the City's code.

Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New  
Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023

**VARIANCE SUPPORT**

Sections 1113.03 and 1155.05 of the City's codified ordinances outline the requirements for a variance. Those requirements have been fulfilled by providing the attached Community Development Planning Application, as well as the items described below. Also refer to the attached Building Sections for the proposed new restroom facility and the substantial improvement of the existing chicken house for information regarding proposed flood protection measures. Similar improvements will be provided for the substantial improvement to the existing barn structure.

1. A legal description of the property where the Taylor Farm Park Phase 2 project will occur is provided as an attachment to the application.
2. The names and mailing addresses of property owners within two hundred (200) feet, contiguous to, and directly across the street from the property, as appearing on the Franklin County Auditor's current tax list, are provided below. Refer to Figure 2 for further information. This list excludes the public right-of-way along Old Dublin-Granville Road. A mailing address for the City of Columbus was not immediately available.
  - a. PID 222-005164 (no street address): City of New Albany
  - b. PID 010-298375 (no street address): City of Columbus
  - c. PID 010-217754 (5526 Dublin-Granville Road): The New Albany Company, 800 Walton Parkway, Suite 120, New Albany, OH. 43054
  - d. PID 545-175656 (no street address): The City of Columbus
3. A showing of good and sufficient cause. [1155.05(C)(1)]
  - a. As documented above, the majority of proposed Taylor Farm Park, Phase 2 project improvements adhere to the City's flood code. The only exception is the proposed restroom building and the substantial improvement to the existing chicken house and barn structure not being elevated or dry flood proofed to the FPE.
  - b. The project meets minimum NFIP regulations, in that the proposed restroom building and the existing structures will be placed above the 100-year flood elevation of Rocky Fork Creek.
    - i. 100-year flood elevation at proposed building location = El. 957.0
    - ii. Lowest Adjacent Grade to proposed building = El. 957.02
    - iii. Finished Floor Elevation of proposed building = El. 957.50

In the case of both the proposed new building and substantial improvements to the existing structures, the buildings will be set back a minimum of 20-feet from the 100-year floodplain, as required under code section 1155.04(c)(8). Granting of a variance for this project will not be inconsistent with federal regulations.
4. A determination that failure to grant the variance would result in exceptional hardship due to the physical characteristics of the property. [1155.05(C)(2)]
  - a. Elevating the new and existing building to be a minimum of 2 feet above the 100-year flood elevation could require up to 1,750 additional cubic yards of fill within the floodplain, requiring additional excavation of 1,837.50 cubic yards for compensatory storage. The current grading plan (refer to Exhibit 1) indicates there is little additional area adjacent to Rocky Fork Creek to provide excavation for additional compensatory storage, within the project limits.

Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New  
Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023

- b. Elevating the proposed buildings to the FPE by utilizing ramps and/or stairs in-lieu of additional fill would impact the ability to provide equal, intuitive, and convenient access to and between the proposed building, existing buildings, and the community gardens. Along with impacts to accessibility, additional ramps and stairs would be incompatible with the characteristics of the existing rural character and agrarian aesthetic of the buildings and site.
  - c. Dry flood proofing the proposed restroom building and the existing structures would require the use of a flood gate closure of doors to these buildings. A typical flood gate door closure would require mobilization and installation of the closure in advance of a flood event, then removal of the closure to reestablish use of the facility. In addition, these materials would need to be stored nearby and periodic test closures would be required. The door gate closures would eventually need to be replaced. The additional flood damage reduction benefits to the buildings beyond what is currently proposed and described under item #6 is minimal.
  - d. The additional project cost of elevating the proposed restroom and the existing structures on fill to the FPE, including providing the additional compensatory storage, is estimated to be over \$200,000.
5. A determination that the granting of a variance will not result in increased flood heights beyond that which is allowed in these regulations; additional threats to public safety; extraordinary public expense, nuisances, fraud on or victimization of the public, or conflict with existing local laws. [1155.05(c)(3)]

A detailed floodplain model has been prepared to represent the proposed grading associated with the project, including the fill and excavation for compensatory storage. Attached is a separate report documenting the outcome of that modeling, which has determined the proposed project will not increase 100-year flood elevations along Rocky Fork Creek.

6. A determination that the structure or other development is protected by methods to minimize flood damages. [1155.05(c)(4)]

The proposed restroom facility and the substantial improvement to the two existing structures will be constructed with flood resistant building materials up to an elevation above the FPE. The flood resistant design elements of the building are described below.

- a. The exterior walls of the restroom facility and the existing buildings will be constructed from Concrete Masonry Units, or similar, to an elevation above the FPE. These walls will be designed to withstand hydrostatic and hydrodynamic loading in the rare instance there is a flood exceeding a 100-year event.
- b. Water and sewer services located within the restroom facility will be elevated above the FPE or will be sealed to be water-tight where below the FPE.
- c. The termination of electrical services within the restroom facility will be elevated above the FPE.
- d. Flood vents will be provided in the walls of the restroom facility and the existing structures to allow for the free movement of flood waters into and out of the building and reduce the hydrostatic and hydrodynamic loading to the buildings. The flood vents will be designed in accordance with Code Section 1155.04 (d)(7) C., or otherwise meet minimum NFIP standards.

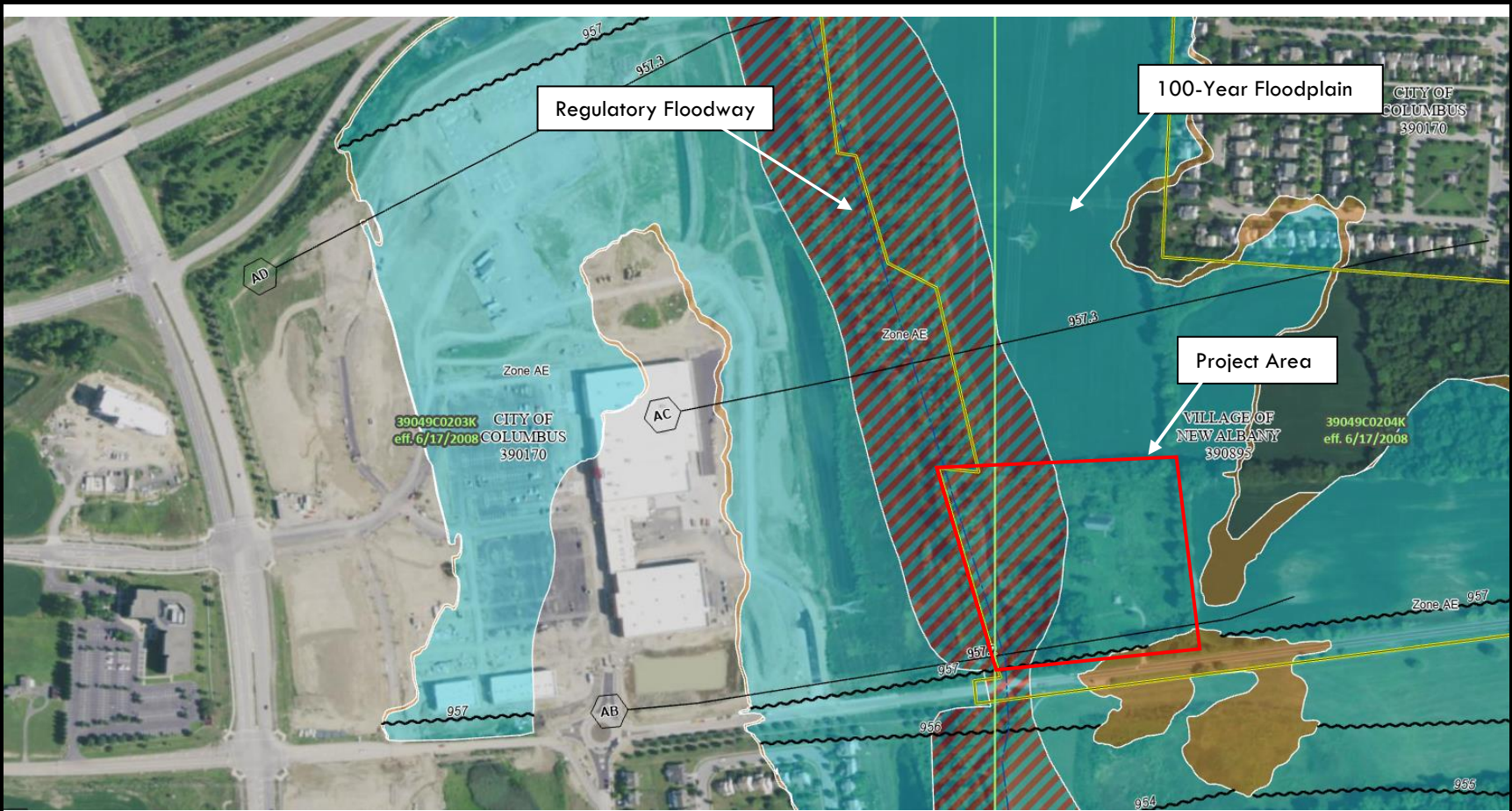
Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New  
Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023

7. A determination that the variance is the minimum necessary, considering the flood hazard, to afford relief. [1155.05(c)(5)]

The proposed Taylor Farm Park, Phase 2 project will be designed and constructed in compliance with the City's flood code, with the only exception of the proposed restroom facility and the substantial improvement of the chicken house and barn structure not meeting the FPE requirement. These building will be flood protected in conformance with minimum NFIP requirements and additional flood resistance measures will be applied above the 100-year flood elevation. As such, the requested variance is the minimum necessary given the documented hard ships.



Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023



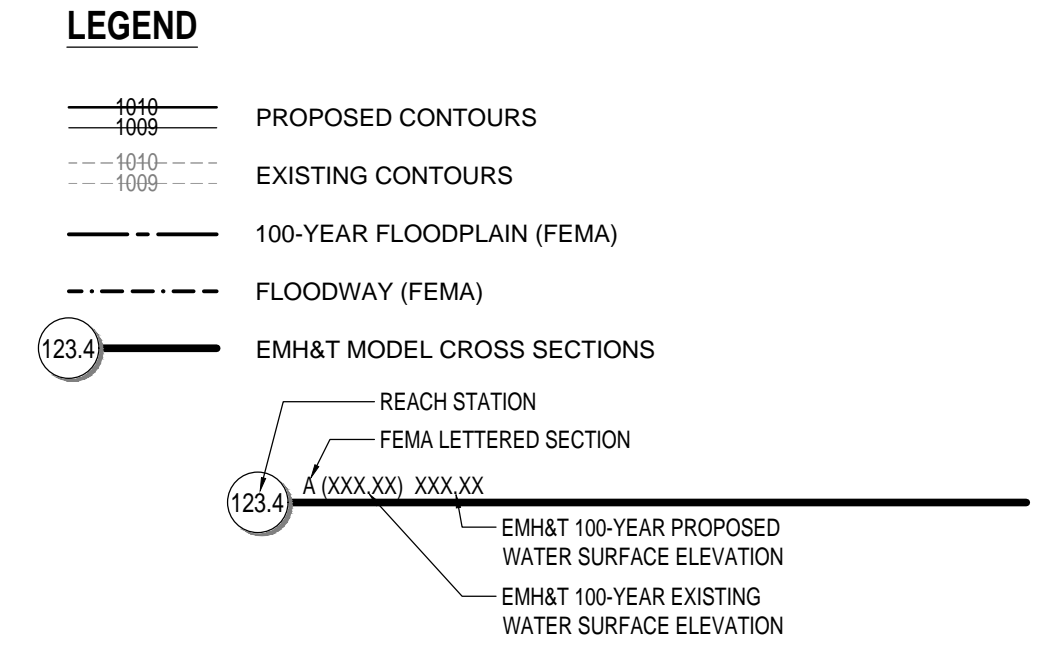
**FIGURE 1**  
**Location of Taylor Farm, Phase 2 Project**

Application for a Variance from Chapter 1155 (Flood Damage Reduction) of the City of New Albany's Codified Ordinances  
Taylor Farm Park, Phase 2  
February 2023



**FIGURE 2**  
**Surrounding Adjacent Parcels**





**FEMA NOTE:**  
ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY'S FLOOD INSURANCE RATE MAP (DATED JUNE 17, 2008) THE SUBJECT PARCEL SHOWN HEREON LIE WITH ZONES 'X' & 'AE'. COMMUNITY PANEL NO. 39049C0204K (BFE=957.18).



P:\2023\02\01 Taylor Farm Phase 2\BIM\_CAD\_GIS\DWG\Sheet\20081.dwg, Planning Commission.dwg Feb 27, 2023, 7:43am-maklog



773.50  
TOP OF ROOF PANEL

765.50  
ROOF BEARING

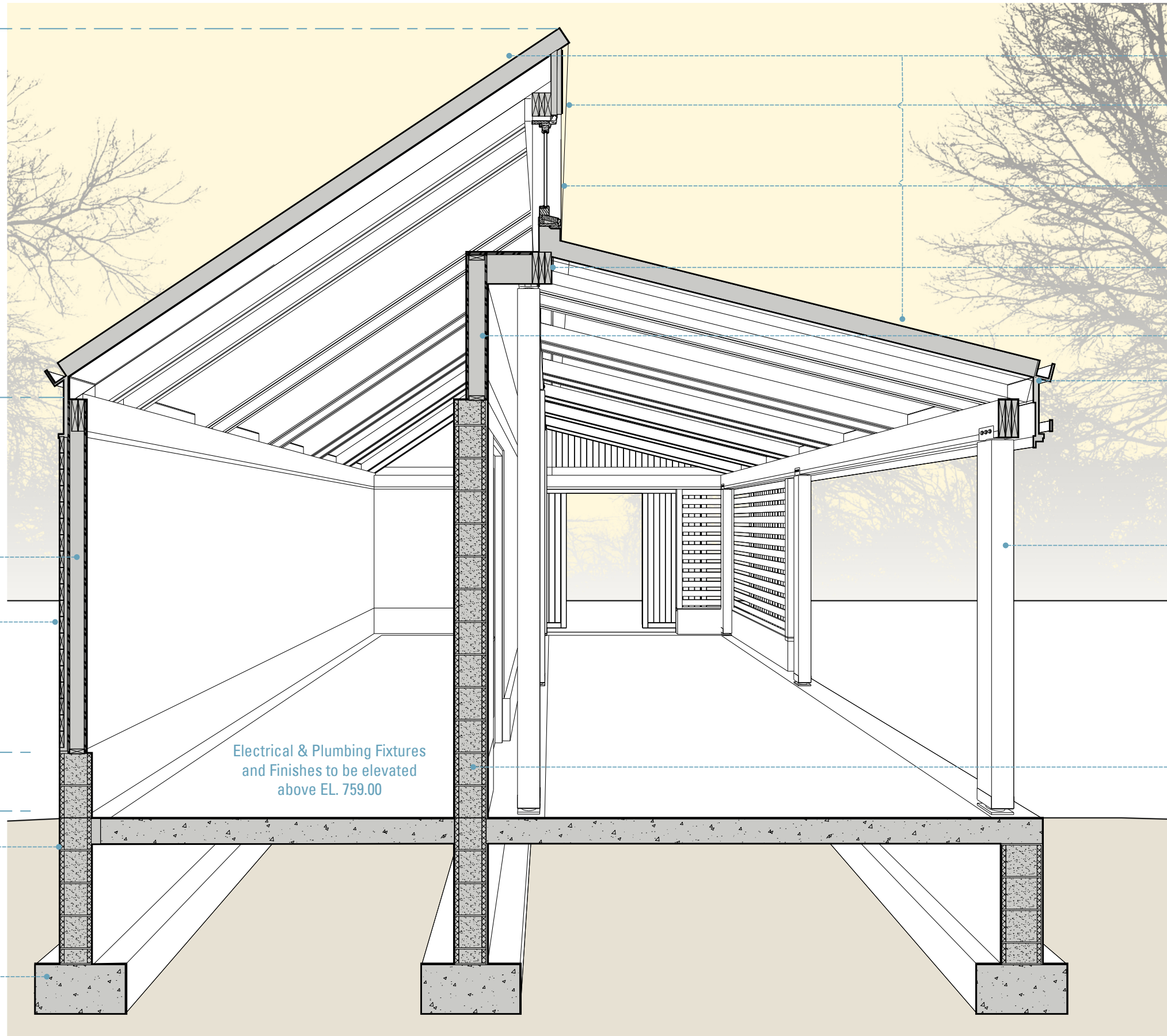
**WOOD STUD WALL :**  
2"×4" Treated Wood With Stain Plywood

**WOOD SIDING TYPE 1:**  
1"× 4" Western Cedar, Grey Stain used as a rain screen on insulated Wood Stud Wall frame. Horizontal, spaced at 4" on center

759.00  
100 YR. + 2 FT.

757.50  
FINISH FLOOR  
**CMU BASE WALL:**  
Honed/ colored CMU to extend 18" above finish floor plane with flood vents at grade

**2'W × 1'H FOOTER:**  
Concrete with bottom of Footer 42" below grade



**STANDING SEAM ROOF:**  
Galvanized Steel roof panels

**WOOD SIDING TYPE 2:**  
1"× 4" Western Cedar, Grey Stain used as a rain screen on insulated Wood Stud Wall frame. Vertical, spaced at 4" on center

**Wood Window**  
Fixed: 2'-8" H × 2'-8" W

**(3) 2"× 10" WOOD BEAM:**  
Western Cedar Post, Grey Stain

**WOOD STUD WALL :**  
2"×4" Treated Wood With Stain Plywood

**(3) 2"× 10" WOOD BEAM:**  
Western Cedar Post, Grey Stain

**6"× 6" WOOD POST:**  
Western Cedar Post, Grey Stain

**CMU**  
Honed, Running Bond in Tri-Color Blend with flood vents at grade

Electrical & Plumbing Fixtures and Finishes to be elevated above EL. 759.00

Proposed Restroom Facility Section

0' 1' 2'

773.50  
TOP OF ROOF PANEL

765.50  
ROOF BEARING

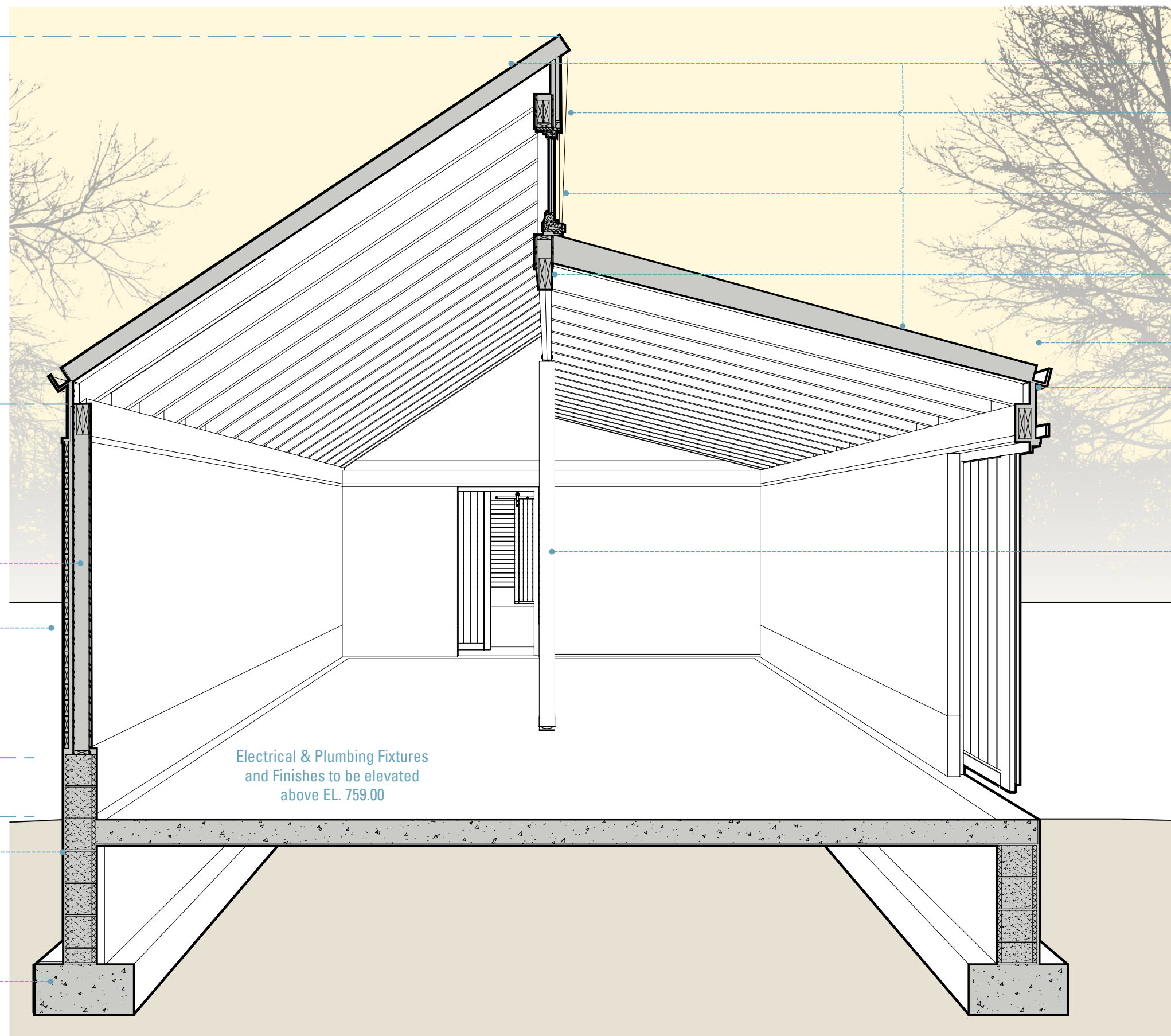
**WOOD STUD WALL :**  
2"×4" Treated Wood With Stain Plywood

**WOOD SIDING TYPE 1:**  
1"× 4" Western Cedar, Grey Stain used as a rain screen on insulated Wood Stud Wall frame. Horizontal, spaced at 4" on center

759.00  
100 YR. + 2 FT.

757.50  
**FINISH FLOOR**  
**CMU BASE WALL:**  
Honed/ colored CMU to extend 18" above finish floor plane with flood vents at grade

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Concrete with bottom of Footer 42" below grade



**STANDING SEAM ROOF:**  
Galvanized Steel roof panels

**WOOD SIDING TYPE 2:**  
1"× 4" Western Cedar, Grey Stain used as a rain screen on insulated Wood Stud Wall frame. Vertical, spaced at 4" on center

**Wood Window**  
Fixed: 2'-8" H × 2'-8" W

**(2) 2"× 10" WOOD BEAM:**  
Western Cedar Post, Grey Stain

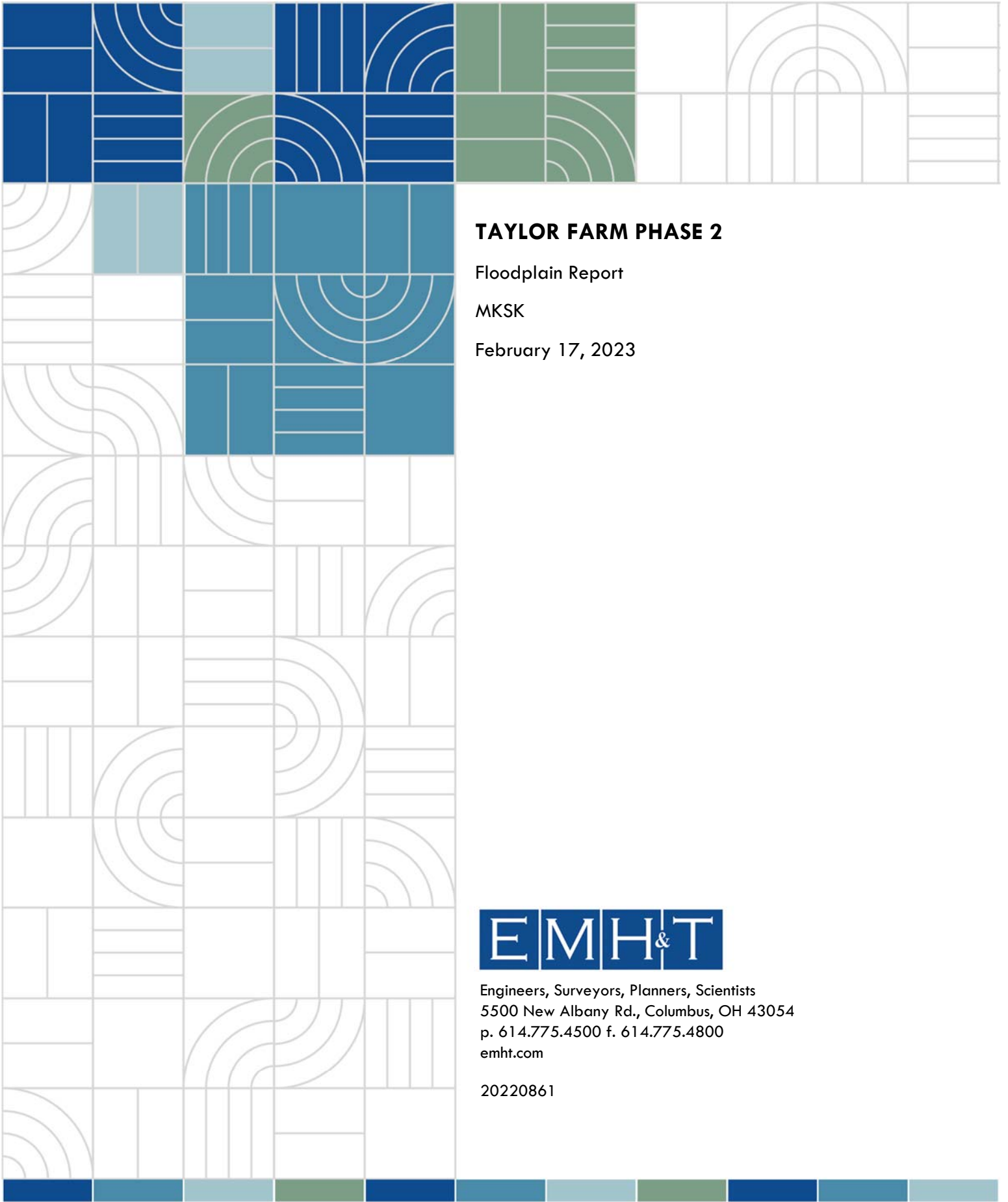
**(2) 2"× 10" WOOD BEAM:**  
Western Cedar Post, Grey Stain

**6"× 6" WOOD POST:**  
Western Cedar Post, Grey Stain

Electrical & Plumbing Fixtures  
and Finishes to be elevated  
above EL. 759.00

Improved Chicken House Section





**TAYLOR FARM PHASE 2**

Floodplain Report

MKSK

February 17, 2023



Engineers, Surveyors, Planners, Scientists  
5500 New Albany Rd., Columbus, OH 43054  
p. 614.775.4500 f. 614.775.4800  
emht.com

20220861

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<b>4.0 EXISTING CONDITIONS HYDRAULICS .....</b>	<b>2</b>
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**FIGURES**

<b>FIGURE 1: Current FEMA Map (39049C0204K)</b>
<b>FIGURE 2: Rocky Fork and Sugar Run Floodplains</b>

**APPENDICES**

<b>APPENDIX A:</b>	<b>No Rise Certification</b>
<b>APPENDIX B:</b>	<b>Duplicate Effective HEC-2 Model</b>
<b>Appendix C:</b>	<b>Duplicate Effective HEC-RAS Model</b>
<b>Appendix D:</b>	<b>Existing Conditions HEC-RAS Model</b>
<b>Appendix E:</b>	<b>Proposed Conditions HEC-RAS Model</b>
<b>Appendix F:</b>	<b>Floodplain Workmap</b>



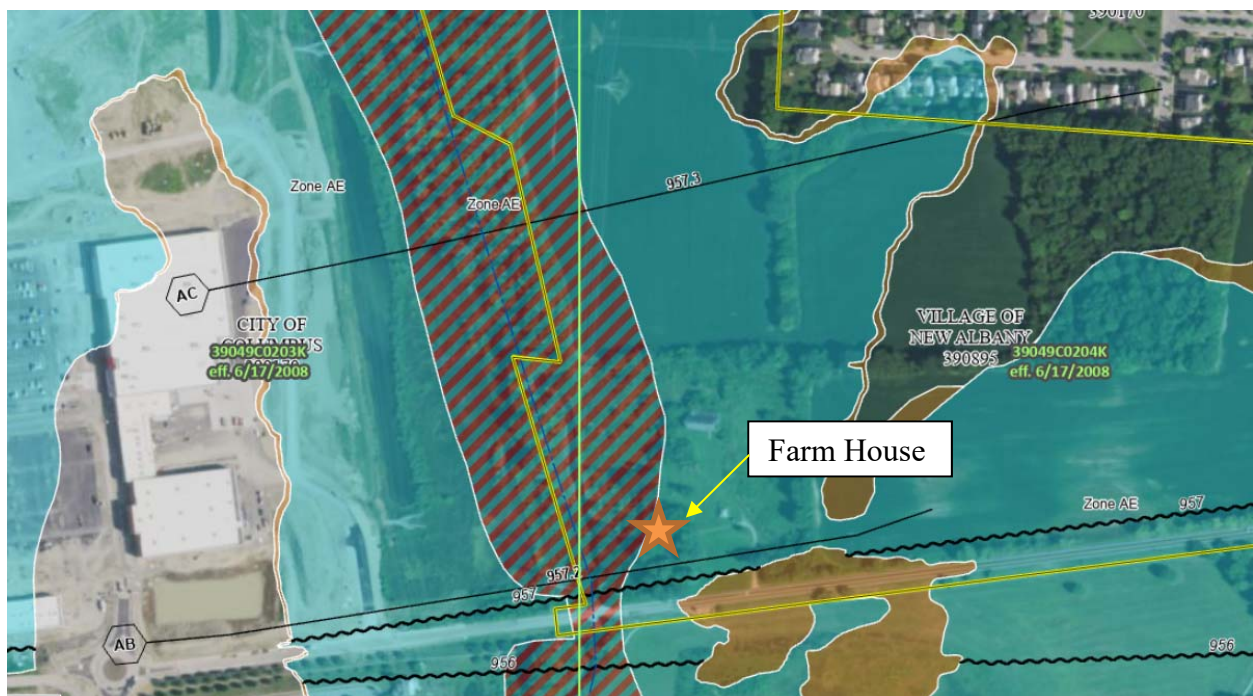
## 1.0 INTRODUCTION

This report analyzes the impacts of proposed grading in the Rocky Fork floodplain associated with the Taylor Farm Phase 2 project. The project involves improvements to the area surrounding the old farm house just east of Rocky Fork creek as shown on the attached improvement plans and on Figure 1. The proposed grading plan includes placing fill in the floodplain and floodway of Rocky Fork creek. Compensatory cut is being provided adjacent to these improvements at a rate no less than 105% of the proposed fill volume.

## 2.0 FEMA PERMITTING

The grading plan encroaches into the existing floodway of Rocky Fork Creek. The floodway is shown on Figure 1. Encroachments into the floodway require either a No Rise Certification (NRC) or Conditional Letter of Map Revision (CLOMR) application to FEMA. The simplest approach is a NRC, which can be permitted locally without having to go through a FEMA review process. The requirement for the NRC is no increase in base flood elevation at any point due to the proposed grading, which also includes grading outside of the floodway.

**Figure 1 – Current FEMA Map (39049C0204K)**



## 3.0 HYDROLOGY

The modeling will use the existing FEMA 100-year flow rate of 2,760 cfs. Changes in flow rate may occur with the Upper Scioto Restudy, but release of that data is still several years away. Flow rates are shown on Table 1.



**TABLE 1**  
**Effective Flow Rates Rocky Fork @ Dublin-Granville Road**

<b>Profile</b>	<b>Flow Rate (cfs)</b>
10-year	1,220
50-year	2,210
100-year	2,760
500-year	4,520

#### **4.0 EXISTING CONDITIONS HYDRAULICS**

##### Duplicate Effective Model

The duplicate effective hydraulic model for Rocky Fork is the original HEC-2 model. The model was converted to HEC-RAS and used for the Taylor Farms Phase 1 study and NRC. The model was truncated just upstream of Dublin-Granville Road for that study with the tailwater elevation forced to the current FEMA elevation of 956.91. This study extends the HEC-2 model downstream to section 873, which is downstream of Thompson Road.

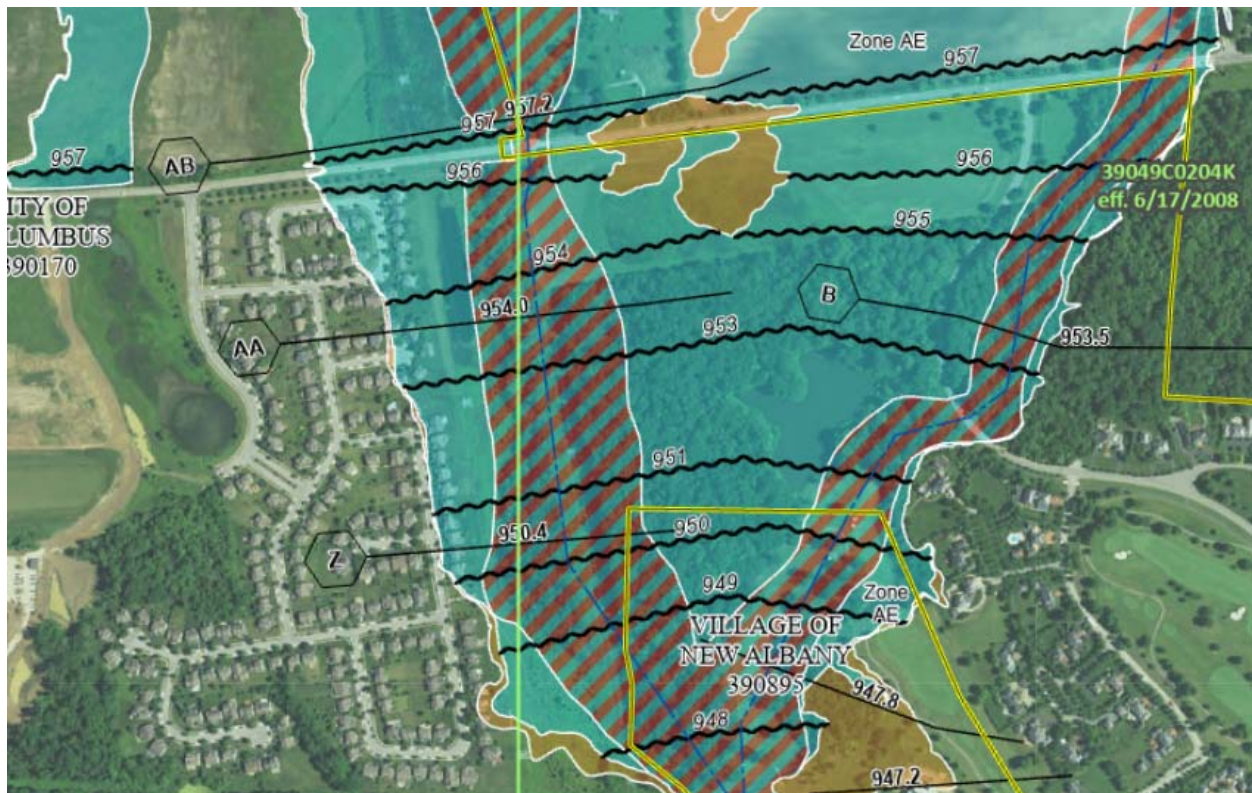
The HEC-2 model had an X5 card inserted into several cross sections including the downstream bridge section of Dublin-Granville Road as well as Section AA and Z, see Figure 2. The X5 card over-rides the calculated elevation and then uses that elevation as the tailwater elevation for the next upstream section. The 100-year elevations in these sections were overridden by the Sugar Run flood elevation at the same latitude essentially. We are assuming when the two HEC-2 models were produced for Rocky Fork and Sugar Run whichever model had a higher elevation over-rode the other since the floodplains at that time appeared to merge and are still shown as a merged floodplain. The X5 card data has to be carried forward to create a true duplicate effective model and also carried through the existing conditions and proposed conditions models as well.

Also of note, the Franklin County FIS lists Section AA as having a regulatory elevation of 954.0, but has a base flood elevation of 949.8 listed, which is the flood elevation without being over written by the X5 card elevation, over a 4-ft difference in elevation. The X5 card elevations for the downstream bridge section for Dublin-Granville Road are listed on Table 2, which is the most upstream section with an X5 card. For the 100-year event, the difference in elevation is over 6-feet, because the elevation was forced to the elevation of Sugar Run just downstream of Dublin Granville Road. Table 3 shows a comparison of duplicate effective HEC-2 vs. HEC-RAS elevations proving we can duplicate the effective HEC-2 model with HEC-RAS.

**TABLE 2**  
**Duplicate Effective Elevations at the Dublin-Granville Road Bridge**  
**Downstream Section 880.2**  
**(1929 datum)**

Profile	HEC-2 Elevation (ft)
10-year	955.06
50-year	955.87
100-year	957.48
500-year	957.74

**Figure 2 – Rocky Fork and Sugar Run Floodplains**



**TABLE 3**  
**Comparison of Duplicate Effective HEC-2 vs. Duplicate Effective HEC-RAS**  
**100-year Storm**  
**(1929 datum)**

Section	HEC-2 Elevation (ft)	Duplicate Effective HEC-RAS Elevation (ft)	Location
881.0	957.54	957.54	Lettered Section AC
880.5	957.52	951.52	Lettered Section AB
880.4	957.51	957.51	Upstream Side of Dublin Granville Road
880.2	957.48	957.48	Downstream side of Dublin Granville Road
880.1	956.28	956.28	
879	954.62	954.62	Lettered Section AA
878	950.90	950.90	Lettered Section Z

Existing Conditions Model

For this level of modeling, four additional sections were added for this project (880.31-880.38) to better capture the true impacts of the proposed grading. The floodplain workmap shows the location of the added sections. For a No Rise certification, this model can then be used as the existing conditions model and compared to proposed conditions to see relative change in flood elevations. Tables 4 and 5 in the next section show the results of the modeling.

The Dublin-Granville Road Bridge was updated with this level of modeling using record plans, Auditors topo, and LIDAR data. The changes have a minor impact to flood levels as the downstream section for the bridge has a forced elevation of 856.88 (1988 datum).

## 5.0 PROPOSED CONDITIONS HYDRAULICS

The proposed condition model is a copy of the updated existing conditions model with proposed grading coded into the left (east) overbank. The results show a drop in flood elevation at all sections as shown on Table 4. All elevations are on 1988 datum.

**TABLE 4**  
**Comparison of Existing vs. Proposed Elevations**

<b>HEC-RAS Section</b>	<b>Location</b>	<b>FEMA Duplicate Effective (ft)</b>	<b>Existing Conditions 100-year (ft)</b>	<b>Proposed Conditions 100-year (ft)</b>	<b>Change in Elevation (ft)</b>
881.10	Between Wetland Cells	956.92	956.98	956.97	-0.01
880.66	Middle Wetland Cell South Embankment		956.93	956.92	-0.01
880.65	North Side of Proposed Grading		956.92	956.91	-0.01
880.64	Proposed Grading		956.92	956.91	-0.01
880.63	Proposed Grading		956.91	956.91	0.00
880.62	Proposed Grading		956.90	956.90	0.00
880.61	South Side of Proposed Grading		956.90	956.90	0.00
880.40	Dublin-Granville Upstream Bridge Section	956.91	956.89	956.89	0.00

APPENDIX A:

No Rise Certification

**ENGINEERING "NO-RISE" CERTIFICATION**

This is to certify that I am a duly qualified engineer licensed to practice in the State of Ohio. It is to further certify that the attached technical data supports the fact that

proposed development: Taylor Farm Park Phase 2 in the floodway will  
*(Name of Development)*

not increase the Base Flood Elevations (100-year flood), floodway elevations and the floodway widths on Rocky Fork Creek at published sections in  
*(Name of Stream)*

the Flood Insurance Study for City of New Albany, dated 6/17/2008  
*(Name of Community)*

and will not increase the Base Flood Elevations (100-year flood), floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

Date 2/17/2023

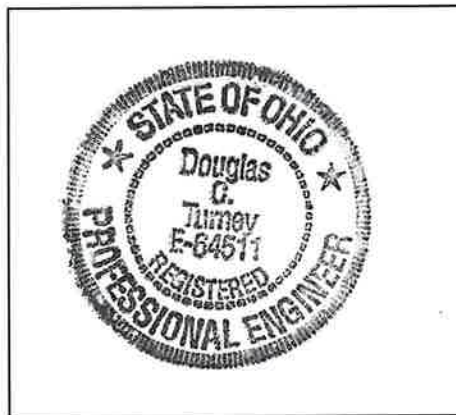
Signature Doug Turney

Phone Number 614-775-4213 EMAIL dturney@emht.com

Representing EMH&T

Address 5500 New Albany Road

City Columbus State Ohio Zip Code 43054



CERTIFYING SEAL OR STAMP

APPENDIX B:

Duplicate Effective HEC-2 Model



*Rocky Fork*

\*\*\*\*\*  
 MEC2 RELEASE DATED NOV 76 UPDATED APR1 1980  
 ERROR CORR - 01,02,03,04  
 MODIFICATION - 50,51,52,53,54  
 \*\*\*\*\*

T1	ROCKY FORK TRIB OF BIG WALNUT														
T2	ROCKY FORK SECTIONS 450 THRU 491.5														
T3	ROCKY FORK FIS RUN 5														
J1	ICHECK	INO	NIN	IDIR	STRT	METRIC	MVINS	U	MSEL	FU					
0.	6.	0.	0.	0.000000	0.00	0.0	0.	0.	789.300	0.000					
J2	NPROF	JPLNT	PREVS	XSECV	XSECH	FN	ALLOC	IRM	CHNIM	ITRACE					
1.000	0.000	-1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000					
J3	VARIABLE CODES FOR SUMMARY PRINTOUT														
38.000	1.000	4.000	13.000	14.000	15.000	10.000	50.000	51.000	21.000						
22.000	53.000	54.000	201.000	0.000	0.000	0.000	0.000	0.000	0.000						

\*\*\*\*\*REQUESTED SECTION NUMBERS\*\*\*\*\*

NC	-10.000	-10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NT	0.050	13100.000	0.050	0.000	0.100	0.300	0.000	0.000	0.000	0.000	0.000	0.000
NH	9.000	13100.000	0.000	0.000	0.000	0.000	3550.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.000	0.000	0.055	0.055	2320.000	0.000	2401.000	0.060	0.000	3800.000	0.045
FT	4724.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.400	0.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Y1	850.000	89.000	2120.000	2401.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CR	404.000	0.000	404.000	36.000	404.000	102.000	102.000	102.000	102.000	102.000	199.000	344.000
CR	404.000	348.000	404.000	394.000	404.000	420.000	420.000	407.000	420.000	409.000	409.000	459.000
CR	409.000	645.000	427.000	860.000	412.000	461.000	461.000	412.000	409.000	409.000	409.000	935.000
CR	402.000	943.000	412.000	1009.000	432.000	1009.000	1322.000	429.000	429.000	420.000	420.000	1191.000
CR	405.000	1362.000	402.000	1243.000	405.000	1322.000	1322.000	420.000	420.000	420.000	420.000	1362.000
CR	414.000	1505.000	799.000	1557.000	799.000	1589.000	1589.000	420.000	420.000	405.000	405.000	1441.000
CR	412.000	1941.000	419.000	2020.000	403.000	1889.000	1889.000	403.000	403.000	404.000	404.000	1441.000
CR	401.000	2134.000	420.000	2138.000	403.500	2021.000	2021.000	403.000	403.000	403.000	403.000	1624.000
CR	741.000	2401.000	741.000	2320.000	775.000	2332.000	2332.000	775.000	775.000	775.000	775.000	1960.000
CR	793.000	3542.000	741.000	3654.000	704.000	3747.000	3747.000	741.000	741.000	742.000	742.000	2070.000
CR	411.000	3992.000	411.000	4041.000	795.000	4042.000	4042.000	797.000	797.000	794.000	794.000	2220.000
CR	410.000	4233.000	410.000	4262.000	799.000	4262.000	4262.000	799.000	799.000	799.000	799.000	2369.000
CR	407.000	4319.000	436.000	4319.000	436.000	4319.000	4319.000	436.000	436.000	436.000	436.000	3351.000

*Rocky Fork Section Listing*



GR	816.000	4437.000	807.000	4466.000	806.000	4543.000	837.000	4543.000
GR	837.000	4639.000	804.000	4684.000	804.000	4724.000	0.000	0.000
NH	4.000	.080	3300.000	.060	4180.000	.070	4728.000	0.000
X1	851.000	57.000	3230.000	3300.000	1299.000	0.000	0.000	0.000
GR	816.000	0.000	815.000	115.000	813.000	527.000	812.000	550.000
GR	812.000	669.000	826.000	669.000	826.000	1169.000	810.000	1208.000
GR	810.000	1232.000	808.000	1353.000	808.000	1380.000	820.000	1691.000
GR	804.000	1691.000	804.000	1720.000	820.000	1988.000	804.000	1988.000
GR	804.000	2011.000	823.000	2011.000	823.000	2306.000	807.000	2329.000
GR	823.000	2329.000	825.000	2677.000	809.000	2702.000	825.000	2703.000
GR	820.000	3044.000	804.000	3044.000	804.000	3065.000	820.000	3198.000
GR	804.000	3198.000	795.000	3219.000	789.000	3230.000	781.000	3281.000
GR	784.000	3267.000	789.000	3300.000	789.000	3377.000	789.000	3679.000
GR	789.000	3791.000	789.000	3993.000	792.000	4055.000	797.000	4176.000
GR	797.000	4180.000	797.000	4200.000	813.000	4201.000	802.000	4399.000
GR	807.000	4534.000	804.000	4728.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.600	.800	0.000	0.000	0.000
NH	4.000	.065	1620.000	.070	2996.000	3096.000	4352.000	0.000
PT	0.000	0.000	0.000	8.100	0.000	0.000	3085.890	0.000

X1	852.100	80.000	2996.000	3096.000	1183.000	0.000	0.000	0.000
GR	825.000	0.000	826.000	38.000	847.000	104.000	824.000	104.000
GR	817.000	184.000	817.000	200.000	836.000	477.000	816.000	478.000
GR	815.000	507.000	815.000	527.000	814.000	770.000	833.000	770.000
GR	833.000	940.000	833.000	1080.000	812.000	1041.000	832.000	1191.000
GR	832.000	1380.000	813.000	1381.000	813.000	1590.000	812.000	1533.000
GR	813.600	1620.000	814.000	1640.000	833.000	1641.000	812.000	2021.000
GR	812.000	2033.000	811.000	2076.000	812.000	2123.000	824.000	2123.000
GR	824.000	2172.000	811.000	2172.000	809.000	2237.000	805.000	2296.000
GR	802.000	2319.000	814.000	2319.000	813.000	2500.000	799.000	2537.000
GR	799.000	2561.000	798.000	2660.000	809.000	2661.000	2900.000	2901.000
GR	797.000	2996.000	787.000	3019.000	784.000	3025.000	787.000	3063.000
GR	798.000	3096.000	798.000	3120.000	808.000	3121.000	808.000	3200.000
GR	798.000	3201.000	798.000	3234.000	798.000	3290.000	808.000	3401.000
GR	808.000	3560.000	798.000	3561.000	798.000	3683.000	799.000	3655.000
GR	812.000	3855.000	812.000	3965.000	823.000	4200.000	804.000	4203.000
GR	807.000	4228.000	824.000	4228.000	824.000	4328.000	807.000	4352.000
NH	4.000	.050	3000.000	.035	3100.500	.060	4351.000	0.000
PT	0.000	0.000	0.000	8.100	0.000	3000.070	3097.730	0.000

X1	852.200	66.000	3000.000	3100.500	53.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	797.500	797.500	0.000
GR	826.000	0.000	826.000	33.000	817.000	186.000	817.000	337.000
GR	815.000	503.000	815.000	526.000	814.000	934.000	812.000	972.000
GR	812.000	996.000	812.000	1200.000	812.000	1489.000	812.000	1535.000
GR	814.000	1650.000	812.000	1769.000	810.000	2073.000	810.000	2100.000
GR	809.000	2228.000	805.000	2260.000	802.000	2344.000	799.000	2535.000
GR	799.000	2559.000	798.000	2698.000	797.000	3000.000	793.700	3000.100
GR	789.900	3012.000	788.000	3018.200	797.500	3030.000	797.500	3031.500
GR	784.500	3031.600	784.500	3039.000	787.000	3053.700	788.500	3069.500

GR	797,500	3069,400	797,500	3070,900	788,300	3071,000	790,500	3085,700	795,800	3100,400
GR	797,500	3100,500	798,000	3101,000	799,000	3120,000	799,000	3137,000	799,000	3150,000
GR	798,000	3211,000	799,000	3231,000	799,000	3281,000	797,000	3292,000	797,000	3394,000
GR	798,000	3404,000	798,000	3441,000	797,000	3458,000	797,000	3560,000	797,000	3650,000
GR	797,000	3660,000	797,000	3682,000	799,000	3872,000	802,000	4093,000	805,000	4209,000
GR	806,000	4351,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	6,000	.055	1200,000	.070	2700,000	.055	2910,000	.035	3010,500	.055
NH	3620,000	.070	4470,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
RA	.950	1,500	3,000	0,000	54,100	3,500	854,500	2,000	785,900	0,000
FT	0,000	0,000	0,000	8,100	0,000	0,000	0,000	2910,050	3010,500	0,000

X1	852,400	70,000	2910,000	3010,500	51,740	51,740	51,740	0,000	0,000	0,000
X2	0,000	0,000	1,000	797,500	798,000	0,000	0,000	0,000	0,000	0,000
X3	10,000	0,000	0,000	0,000	0,000	0,000	0,000	799,500	797,500	0,000
RT	22,000	0,000	822,000	0,000	640,000	813,000	0,000	940,000	812,000	0,000
RT	1180,000	809,000	0,000	1225,000	814,000	0,000	1365,000	814,000	0,000	1455,000
RT	812,000	0,000	1775,000	811,000	0,000	1970,000	811,000	0,000	2080,000	812,000
RT	0,000	2140,000	810,000	0,000	2205,000	805,000	0,000	2500,000	799,500	0,000
RT	2909,000	799,500	0,000	2910,000	802,500	797,500	3010,500	802,500	797,500	3011,000
RT	798,500	0,000	3500,000	797,000	0,000	3620,000	797,000	0,000	3622,000	792,000
RT	0,000	3701,000	797,000	0,000	4470,000	805,000	0,000	0,000	0,000	0,000
GR	822,000	0,000	817,000	276,000	815,000	390,000	813,000	684,000	813,000	758,000
GR	813,000	780,000	812,000	942,000	810,000	1081,000	809,000	1142,000	810,000	1172,000
GR	812,000	1189,000	812,600	1200,000	814,000	1226,000	814,000	1365,000	812,000	1455,000
GR	812,000	1482,000	812,000	1619,000	811,000	1773,000	812,000	1850,000	811,000	1862,000
GR	811,000	1976,000	812,000	2045,000	810,000	2140,000	805,000	2206,000	805,000	2235,000
GR	804,000	2251,000	799,000	2297,000	800,000	2372,000	797,000	2472,000	797,000	2635,000
GR	798,000	2656,000	796,100	2700,000	795,000	2724,000	794,000	2908,000	797,500	2910,000
GR	793,700	2910,100	788,000	2928,200	786,600	2933,000	784,500	2939,900	797,500	2940,000
GR	797,500	2941,500	784,500	2941,600	784,300	2949,000	787,900	2963,700	787,900	2965,000
GR	788,300	2979,300	797,500	2979,400	797,500	2980,900	788,300	2981,000	790,500	2995,700
GR	795,800	3010,400	797,500	3010,500	794,000	3160,000	794,000	3400,000	794,000	3610,000
GR	794,000	3620,000	794,000	3622,000	794,000	3643,000	794,000	3643,000	794,000	3701,000
GR	799,000	3701,000	800,000	3748,000	816,000	3748,000	816,000	3824,000	801,000	3824,000
GR	802,000	3888,000	802,000	3907,000	817,000	3907,000	820,000	4470,000	805,000	4470,000
NH	4,000	.065	2899,000	.035	2990,000	.060	3820,000	.080	4093,000	0,000
FT	0,000	0,000	0,000	5,400	0,000	0,000	0,000	0,000	0,000	0,000

X1	852,500	76,000	2899,000	2990,000	53,000	53,000	53,000	0,000	0,000	0,000
GR	822,000	0,000	817,000	253,000	816,000	363,000	815,000	390,000	813,000	968,000
GR	829,000	568,000	829,000	745,000	813,000	745,000	813,000	767,000	814,000	826,000
GR	811,000	1038,000	808,000	1093,000	807,000	1130,000	808,000	1174,000	813,000	1214,000
GR	814,000	1330,000	811,000	1402,000	810,000	1446,000	810,000	1474,000	814,000	1623,000
GR	811,000	1677,000	826,000	1677,000	826,000	1748,000	812,000	1758,000	814,000	1766,000
GR	825,000	1766,000	825,000	1829,000	812,000	1829,000	810,000	1854,000	810,000	1942,000
GR	811,000	2008,000	826,000	2008,000	826,000	2082,000	812,000	2082,000	812,000	2115,000
GR	836,000	2115,000	836,000	2156,000	812,000	2156,000	804,000	2199,000	804,000	2222,000
GR	800,000	2234,000	800,000	2251,000	815,000	2251,000	815,000	2285,000	801,000	2286,000
GR	802,000	2370,000	801,000	2430,000	798,000	2462,000	797,000	2533,000	802,000	2533,000
GR	822,000	2582,000	797,000	2582,000	796,000	2615,000	798,000	2647,000	798,000	2694,000
GR	798,000	2702,000	793,000	2845,000	794,000	2899,000	788,000	2929,000	784,500	2936,000
GR	784,500	2947,000	788,000	2954,000	795,000	2990,000	794,000	3058,000	794,000	3200,000

X1	852,500	76,000	2899,000	2990,000	53,000	53,000	53,000	0,000	0,000	0,000
GR	822,000	0,000	817,000	253,000	816,000	363,000	815,000	390,000	813,000	968,000
GR	829,000	568,000	829,000	745,000	813,000	745,000	813,000	767,000	814,000	826,000
GR	811,000	1038,000	808,000	1093,000	807,000	1130,000	808,000	1174,000	813,000	1214,000
GR	814,000	1330,000	811,000	1402,000	810,000	1446,000	810,000	1474,000	814,000	1623,000
GR	811,000	1677,000	826,000	1677,000	826,000	1748,000	812,000	1758,000	814,000	1766,000
GR	825,000	1766,000	825,000	1829,000	812,000	1829,000	810,000	1854,000	810,000	1942,000
GR	811,000	2008,000	826,000	2008,000	826,000	2082,000	812,000	2082,000	812,000	2115,000
GR	836,000	2115,000	836,000	2156,000	812,000	2156,000	804,000	2199,000	804,000	2222,000
GR	800,000	2234,000	800,000	2251,000	815,000	2251,000	815,000	2285,000	801,000	2286,000
GR	802,000	2370,000	801,000	2430,000	798,000	2462,000	797,000	2533,000	802,000	2533,000
GR	822,000	2582,000	797,000	2582,000	796,000	2615,000	798,000	2647,000	798,000	2694,000
GR	798,000	2702,000	793,000	2845,000	794,000	2899,000	788,000	2929,000	784,500	2936,000
GR	784,500	2947,000	788,000	2954,000	795,000	2990,000	794,000	3058,000	794,000	3200,000

X1	852,500	76,000	2899,000	2990,000	53,000	53,000	53,000	0,000	0,000	0,000
GR	822,000	0,000	817,000	253,000	816,000	363,000	815,000	390,000	813,000	968,000
GR	829,000	568,000	829,000	745,000	813,000	745,000	813,000	767,000	814,000	826,000
GR	811,000	1038,000	808,000	1093,000	807,000	1130,000	808,000	1174,000	813,000	1214,000
GR	814,000	1330,000	811,000	1402,000	810,000	1446,000	810,000	1474,000	814,000	1623,000
GR	811,000	1677,000	826,000	1677,000	826,000	1748,000	812,000	1758,000	814,000	1766,000
GR	825,000	1766,000	825,000	1829,000	812,000	1829,000	810,000	1854,000	810,000	1942,000
GR	811,000	2008,000	826,000	2008,000	826,000	2082,000	812,000	2082,000	812,000	2115,000
GR	836,000	2115,000	836,000	2156,000	812,000	2156,000	804,000	2199,000	804,000	2222,000
GR	800,000	2234,000	800,000	2251,000	815,000	2251,000	815,000	2285,000	801,000	2286,000
GR	802,000	2370,000	801,000	2430,000	798,000	2462,000	797,000	2533,000	802,000	2533,000
GR	822,000	2582,000	797,000	2582,000	796,000	2615,000	798,000	2647,000	798,000	2694,000
GR	798,000	2702,000	793,000	2845,000	794,000	2899,000	788,000	2929,000	784,500	2936,000
GR	784,500	2947,000	788,000	2954,000	795,000	2990,000	794,000	3058,000	794,000	3200,000

GR	794,000	3602,000	796,000	3615,000	799,000	3667,000	802,900	3820,000
GR	803,000	3880,000	803,000	3898,000	818,000	3898,000	820,000	4453,000
GR	805,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	4,000	0,065	2193,000	0,35	2279,000	0,070	3313,000	0,000
FT	0,000	2,400	0,000	0,000	0,000	0,000	0,000	0,000

X1	853,000	55,000	2193,000	1386,000	1386,000	1386,000	0,000	0,000
XS	1,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GR	822,000	139,000	825,000	244,000	817,000	363,000	815,000	388,000
GR	814,000	420,000	814,000	445,000	826,000	557,000	814,000	557,000
GR	815,000	729,000	811,000	771,000	812,000	828,000	811,000	925,000
GR	853,000	925,000	853,000	1037,000	809,000	1093,000	807,000	1120,000
GR	804,000	1297,000	805,000	1366,000	824,000	1381,000	804,000	1381,000
GR	822,000	1477,000	802,000	1505,000	807,000	1620,000	822,000	1621,000
GR	797,000	2019,000	802,000	2045,000	799,000	2091,000	797,000	2133,000
GR	798,000	2193,000	793,000	2218,000	790,500	2253,000	793,000	2258,000
GR	798,000	2279,000	799,000	2411,000	801,000	2528,000	818,000	2528,000
GR	818,000	2591,000	801,000	2629,000	801,000	2687,000	802,000	2817,000
GR	813,000	2939,000	816,000	3191,000	819,000	3272,000	819,000	3313,000
NC	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	4,000	0,065	542,000	0,060	679,000	0,070	2456,000	0,000
FT	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

X1	854,100	92,000	582,000	659,870	659,470	659,470	0,000	0,000
GR	806,000	0,000	804,000	182,000	803,000	191,000	803,000	297,000
GR	816,000	297,000	793,000	326,000	802,000	355,000	802,000	542,000
GR	795,000	597,000	793,000	636,000	795,000	629,000	802,000	679,000
GR	803,000	710,000	803,000	731,000	806,000	929,000	806,000	951,000
GR	806,000	1061,000	807,000	1177,000	812,000	1329,000	808,000	1380,000
GR	808,000	1411,000	806,000	1489,000	807,000	1570,000	809,600	1610,000
GR	810,000	1615,000	817,000	1682,000	819,000	1682,000	820,000	1773,000
GR	830,000	1773,000	830,000	1849,000	829,000	1922,000	833,000	1922,000
GR	833,000	1952,000	824,000	2025,000	834,000	2025,000	834,000	2099,000
GR	826,000	2099,000	826,000	2130,000	834,000	2207,000	828,000	2207,000
GR	827,000	2347,000	830,000	2436,000	834,000	0,000	0,000	0,000
NH	4,000	0,050	602,000	0,050	0,000	0,070	2430,000	0,000
FT	0,000	0,000	0,000	0,000	1580,000	510,000	692,000	0,000

X1	854,200	42,000	602,000	53,000	53,000	53,000	0,000	0,000
X3	10,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GR	806,000	0,000	804,000	180,000	804,000	291,000	803,000	325,000
GR	802,000	392,000	802,000	602,000	803,600	602,100	803,600	607,500
GR	800,400	607,600	797,200	625,000	796,600	642,000	796,600	656,500
GR	793,400	174,000	795,500	687,100	803,400	691,900	804,600	692,000
GR	805,000	733,000	805,000	850,000	806,000	912,000	806,000	940,000
GR	806,000	956,000	806,000	1091,000	810,000	1253,000	809,000	1265,000
GR	802,000	1528,000	810,800	1699,000	815,000	1774,000	825,000	1867,000
GR	802,000	1867,000	802,000	1899,000	826,000	1973,000	827,000	2060,000
GR	828,000	2247,000	830,000	2430,000	830,000	0,000	0,000	0,000
NH	4,000	0,050	675,000	0,035	765,000	0,045	2388,000	0,000
RA	0,000	1,500	3,000	0,000	82,000	0,500	796,800	796,800



GR	807.000	1271.000	809.000	1275.000	814.000	1292.000	819.000	1347.000
GR	819.000	1580.000	823.000	1668.000	823.000	1820.000	823.000	1829.000
GR	853.000	1971.000	857.000	2214.000	855.000	2414.000	0.000	0.000
NH	4.000	.055	460.000	.050	1020.000	.055	1739.000	0.000
FT	0.000	8.100	0.000	0.000	0.000	371.100	459.850	0.000
X1	857.000	20.000	371.000	1695.000	1695.000	0.000	0.000	0.000
GR	882.000	0.000	882.000	135.000	879.000	229.000	855.000	336.000
GR	828.000	371.000	815.000	404.000	815.000	427.000	817.000	831.000
GR	828.000	460.000	828.000	814.000	830.000	980.000	830.800	1020.000
GR	831.000	1029.000	834.000	1239.000	842.000	1485.000	866.000	1739.000
NH	5.000	.055	569.000	.055	730.000	.050	1520.000	.055
NH	1678.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	566.240	990.000	0.000

X1	858.000	18.000	569.000	1827.000	1827.000	1827.000	0.000	0.000
GR	886.000	0.000	886.000	394.000	886.000	475.000	840.000	565.000
GR	837.000	569.000	828.500	600.000	836.000	632.000	837.000	730.000
GR	837.000	840.000	837.000	1029.000	837.000	1325.000	839.000	1410.000
GR	862.000	1517.000	862.000	1678.000	0.000	0.000	0.000	0.000
NH	3.000	.055	545.000	.055	726.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	500.210	704.250	0.000

X1	859.000	16.000	545.000	1859.000	1859.000	1859.000	0.000	0.000
GR	921.000	0.000	921.000	360.000	917.000	469.000	855.000	945.000
GR	845.000	561.000	843.500	594.000	845.000	597.000	848.000	616.000
GR	855.000	726.000	855.000	1120.000	855.000	1153.000	913.000	1308.000
GR	913.000	1558.000	913.000	0.000	0.000	0.000	0.000	0.000
QT	9.000	10030.000	6120.000	2720.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	320.000	.050	680.000	.035	788.000	.050
NH	1762.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	860.000	19.000	708.000	1727.000	1727.000	1727.000	0.000	0.000
GR	921.000	0.000	921.000	320.000	920.000	339.000	870.000	595.000
GR	870.000	680.000	870.000	728.000	860.000	730.000	864.000	752.000
GR	865.000	754.000	870.000	882.000	871.000	1044.000	871.000	1555.000
GR	910.000	1697.000	910.000	1712.000	911.000	1792.000	0.000	0.000
NH	5.000	.050	100.000	.035	442.000	.055	1000.000	.050
NH	1324.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	442.000	552.580	0.000

X1	861.000	16.000	442.000	1309.000	1309.000	1309.000	0.000	0.000
GR	923.000	0.000	921.500	130.000	922.000	267.000	921.000	330.000
GR	885.000	442.000	874.000	462.000	875.000	464.000	879.000	490.000
GR	885.000	574.000	889.000	936.000	935.300	1000.000	936.000	1139.000
GR	936.000	1324.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	150.000	.055	704.000	.035	1480.000	.050

NH	1732.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	0.000	711.500	0.000	0.000	0.000
X1	862.000	19.000	785.000	909.000	1515.000	1515.000	1515.000	1515.000	1515.000	0.000	0.000	0.000	0.000
GR	956.000	0.000	956.000	150.000	956.000	956.000	199.000	959.000	959.000	285.000	948.000	502.000	502.000
GR	986.000	642.000	905.000	705.000	892.500	723.000	723.000	892.500	892.500	739.000	893.000	740.000	740.000
GR	897.000	789.000	903.000	909.000	920.000	1009.000	1009.000	929.000	929.000	1079.000	927.000	1254.000	1254.000
GR	930.000	1476.000	930.100	1480.000	934.000	1619.000	1619.000	936.000	936.000	1732.000	0.000	0.000	0.000
NH	4.000	0.000	600.000	0.000	775.000	0.000	0.000	1280.000	1280.000	0.000	1433.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	0.000	621.170	771.580	0.000	0.000

X1	863.100	16.000	600.000	775.000	1251.390	1251.390	1251.390	1251.390	1251.390	0.000	0.000	0.000	0.000
GR	937.000	0.000	930.000	199.000	929.000	285.000	285.000	922.000	922.000	461.000	913.000	600.000	600.000
GR	908.000	688.000	904.000	706.000	903.500	707.000	707.000	903.500	903.500	748.000	913.000	775.000	775.000
GR	932.000	806.000	933.000	830.000	934.000	962.000	962.000	934.000	934.000	1280.000	934.000	1293.000	1293.000
GR	935.000	1433.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	4.000	0.000	671.000	0.000	761.000	0.000	0.000	1300.000	1300.000	0.000	1443.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	0.000	671.050	756.310	0.000	0.000

X1	863.200	25.000	671.000	761.000	53.000	53.000	53.000	53.000	53.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	914.000	918.700	0.000	0.000
GR	937.000	0.000	931.000	195.000	926.000	380.000	380.000	924.000	924.000	483.000	914.000	596.000	596.000
GR	918.200	671.000	905.700	671.100	905.400	675.000	675.000	904.700	904.700	694.000	904.500	700.000	700.000
GR	903.900	716.000	904.100	731.000	905.800	738.000	738.000	906.500	906.500	739.000	906.500	747.000	747.000
GR	914.700	760.900	918.700	761.000	930.000	809.000	809.000	930.000	930.000	841.000	934.000	937.000	937.000
GR	934.000	1169.000	935.000	1186.000	934.000	1208.000	1208.000	934.800	934.800	1300.000	935.000	1453.000	1453.000
NH	4.000	0.000	1146.000	0.000	1236.000	0.000	0.000	1580.000	1580.000	0.000	1943.000	0.000	0.000
NH	0.000	1.500	3.000	0.000	76.200	0.000	0.000	1147.000	1147.000	0.000	904.900	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	0.000	1146.050	1231.910	0.000	0.000

X1	863.400	28.000	1146.000	1236.000	27.460	27.460	27.460	27.460	27.460	0.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	918.700	921.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	921.000	921.000	0.000	0.000
AT	16.000	0.000	956.000	0.000	200.000	952.000	952.000	0.000	0.000	380.000	947.000	0.000	0.000
AT	600.000	936.000	0.000	720.000	932.000	0.000	0.000	920.000	920.000	927.000	0.000	1070.000	1070.000
AT	923.000	0.000	1145.000	921.000	1146.000	1146.000	1146.000	923.500	923.500	918.200	1236.000	924.000	924.000
AT	918.700	1237.000	921.000	0.000	1275.000	921.500	921.500	1983.000	1983.000	936.000	930.000	0.000	0.000
AT	1500.000	934.000	0.000	1780.000	934.000	0.000	0.000	936.000	936.000	0.000	0.000	0.000	0.000
GR	956.000	0.000	952.000	205.000	947.000	382.000	382.000	936.000	936.000	603.000	930.000	783.000	783.000
GR	922.000	1127.000	929.000	978.000	924.000	1023.000	1023.000	922.000	922.000	1055.000	922.000	1047.000	1047.000
GR	904.500	1175.000	903.900	1191.000	905.700	1146.100	1146.100	905.400	905.400	1150.000	904.800	1167.000	1167.000
GR	914.700	1235.900	918.700	1236.000	920.000	1263.000	1263.000	930.000	930.000	1351.000	934.000	1504.000	1504.000
GR	934.000	1580.000	934.000	1746.000	936.000	1983.000	1983.000	936.000	936.000	0.000	0.000	0.000	0.000
NH	5.000	0.000	950.000	0.000	1080.000	0.000	0.000	1282.000	1282.000	0.000	1550.000	0.000	0.000
NH	1984.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	0.000	1109.960	1205.440	0.000	0.000

Y1	863.500	24.000	1080.000	53.000	53.000	53.000	53.000	53.000	53.000	53.000	0.000	0.000
GR	955.000	0.000	941.000	947.000	362.000	940.000	940.000	940.000	940.000	937.000	937.000	574.000
GR	932.000	694.000	925.000	924.600	950.000	924.000	924.000	924.000	924.000	904.000	904.000	1041.000
GR	922.000	1090.000	922.000	905.000	1134.000	904.000	904.000	904.000	904.000	904.000	904.000	1172.000
GR	905.000	1174.000	918.000	920.000	1282.000	920.000	920.000	920.000	920.000	936.000	936.000	1468.000
GR	933.700	1550.000	933.000	934.000	1733.000	934.000	934.000	934.000	934.000	937.000	937.000	0.000
NC	0.000	0.000	0.000	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.050	1000.000	1451.000	0.035	1621.000	1621.000	1621.000	1621.000	2400.000	2400.000	0.050
NH	2952.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Y1	864.000	28.000	1491.000	998.000	998.000	998.000	998.000	998.000	998.000	998.000	998.000	0.000
GR	966.000	0.000	963.000	956.000	541.000	956.000	956.000	956.000	956.000	951.000	951.000	793.000
GR	948.100	1000.000	948.000	942.000	1004.000	942.000	942.000	942.000	942.000	948.000	948.000	1058.000
GR	942.000	1188.000	942.000	939.000	1323.000	939.000	939.000	939.000	939.000	914.000	914.000	1540.000
GR	911.000	1556.000	910.000	910.000	1558.000	910.000	910.000	910.000	910.000	915.000	915.000	1621.000
GR	920.000	1738.000	926.000	932.000	1966.000	932.000	932.000	932.000	932.000	936.600	936.600	2000.000
GR	937.000	2511.000	938.000	940.000	2952.000	940.000	940.000	940.000	940.000	0.000	0.000	0.000
NH	5.000	0.055	1917.000	2120.000	0.055	2500.000	2500.000	2500.000	2500.000	2900.000	2900.000	0.055
NH	3272.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Y1	865.000	24.000	1917.000	1109.000	1109.000	1109.000	1109.000	1109.000	1109.000	1109.000	1109.000	0.000
GR	949.000	0.000	949.000	947.000	875.000	946.000	946.000	946.000	946.000	945.000	945.000	1128.000
GR	940.000	1353.000	938.000	938.000	1651.000	938.000	938.000	938.000	938.000	921.000	921.000	1917.000
GR	916.000	1982.000	918.000	914.000	2060.000	914.000	914.000	914.000	914.000	912.500	912.500	2098.000
GR	921.000	2170.000	934.000	939.000	2309.000	939.000	939.000	939.000	939.000	944.000	944.000	2554.000
GR	946.000	2855.000	946.200	947.000	3065.000	947.000	947.000	947.000	947.000	0.000	0.000	0.000
NH	5.000	0.055	2108.000	2352.000	0.055	3010.000	3010.000	3010.000	3010.000	3410.000	3410.000	0.055
NH	4467.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Y1	866.000	43.000	2108.000	1251.000	1251.000	1251.000	1251.000	1251.000	1251.000	1251.000	1251.000	0.000
GR	978.000	0.000	968.000	964.000	312.000	969.000	969.000	969.000	969.000	989.000	989.000	356.000
GR	964.000	356.000	959.000	959.000	500.000	958.000	958.000	958.000	958.000	977.000	977.000	621.000
GR	977.000	680.000	957.000	954.000	859.000	953.000	953.000	953.000	953.000	951.000	951.000	1111.000
GR	951.000	1130.000	971.000	971.000	1210.000	951.000	951.000	951.000	951.000	926.000	926.000	1326.000
GR	950.000	1478.000	948.000	945.000	1855.000	940.000	940.000	940.000	940.000	926.000	926.000	2108.000
GR	917.000	2127.000	917.000	919.000	2170.000	924.000	924.000	924.000	924.000	926.000	926.000	2352.000
GR	925.000	2448.000	924.000	925.000	2537.000	927.000	927.000	927.000	927.000	931.000	931.000	2744.000
GR	938.000	2883.000	946.000	946.300	3010.000	949.000	949.000	949.000	949.000	954.000	954.000	3358.000
GR	956.300	3410.000	958.000	958.000	4467.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.050	2583.000	2693.000	0.055	3020.000	3020.000	3020.000	3020.000	3625.000	3625.000	0.055
NH	4656.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Y1	867.000	43.000	2583.000	1236.000	1236.000	1236.000	1236.000	1236.000	1236.000	1236.000	1236.000	0.000
GR	966.000	0.000	966.000	966.000	560.000	967.000	967.000	967.000	967.000	966.000	966.000	789.000
GR	966.000	930.000	969.000	965.000	1204.000	965.000	965.000	965.000	965.000	958.000	958.000	1490.000
GR	952.000	1543.000	951.000	949.000	1648.000	948.000	948.000	948.000	948.000	945.000	945.000	1915.000
GR	945.000	2204.000	944.000	944.000	2300.000	944.000	944.000	944.000	944.000	964.000	964.000	2340.000



GR	984,000	2341,000	943,000	935,000	2421,000	926,000	2463,000	926,000	2527,000
GR	926,000	2543,000	925,000	923,000	2612,000	921,000	2636,000	921,000	2662,000
GR	923,000	2666,000	926,000	932,000	2756,000	931,000	2877,000	943,000	2995,000
GR	943,300	3020,000	946,000	951,000	3394,000	951,400	3625,000	955,000	3944,000
GR	955,000	4200,000	955,000	955,000	4656,000	0,000	0,000	0,000	0,000
NH	5,000	.050	1040,000	1843,000	.035	1910,000	.055	2000,000	.050
NH	2568,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

Y1	868,000	37,000	1843,000	1103,520	1103,520	1103,520	0,000	0,000	0,000
GR	960,000	0,000	962,000	960,000	91,000	960,000	110,000	965,000	123,000
GR	966,000	144,000	955,000	944,000	415,000	944,000	620,000	944,000	800,000
GR	944,000	950,000	949,000	946,900	1040,000	944,000	1134,000	944,000	1380,000
GR	945,000	1411,000	964,000	964,000	1431,000	945,000	1431,000	945,000	1443,000
GR	947,000	1503,000	972,000	972,000	1517,000	947,000	1517,000	944,000	1553,000
GR	930,000	1645,000	974,000	928,000	1843,000	925,000	1861,000	923,000	1865,000
GR	923,000	1891,000	925,000	928,000	1910,000	944,000	2000,000	944,000	2160,000
GR	954,000	2317,000	956,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	6,000	.050	340,000	1911,000	.035	2133,000	.055	2420,000	.060
NH	2520,000	.055	3430,000	0,000	0,000	0,000	0,000	0,000	0,000

Y1	669,000	46,000	1613,000	2075,000	2075,000	2075,000	0,000	0,000	0,000
GR	947,000	0,000	946,000	946,000	320,000	946,000	380,000	946,000	510,000
GR	946,000	700,000	946,000	946,000	1105,000	949,000	1191,000	960,000	1191,000
GR	960,000	1249,000	949,000	944,000	1335,000	954,000	1335,000	954,000	1382,000
GR	941,000	1342,000	933,000	931,000	1911,000	930,000	2041,000	927,000	2079,000
GR	924,500	2084,000	924,500	927,000	2121,000	933,000	2133,000	939,000	2231,000
GR	941,000	2394,000	950,000	950,000	2374,000	941,000	2374,000	940,000	2400,000
GR	940,000	2420,000	940,000	940,000	2560,000	940,000	2660,000	954,000	2660,000
GR	956,000	2707,000	940,000	940,000	2738,000	948,000	2882,000	950,000	3003,000
GR	963,000	3004,000	963,000	950,000	3049,000	947,000	3182,000	946,000	3200,000
GR	946,000	3430,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	5,000	.050	1440,000	1659,000	.035	1854,000	.055	2120,000	.050
NH	4467,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

Y1	870,000	46,000	1659,000	1246,000	1246,000	1246,000	0,000	0,000	0,000
GR	944,000	0,000	944,000	944,000	500,000	944,000	830,000	949,000	852,000
GR	944,000	864,000	944,000	944,000	911,000	943,000	1020,000	943,000	1235,000
GR	943,000	1440,000	943,000	933,000	1547,000	931,000	1659,000	928,000	1687,000
GR	925,000	1693,000	925,000	926,000	1720,000	932,000	1856,000	935,000	1891,000
GR	937,000	2023,000	941,300	942,000	2135,000	942,000	2159,000	942,000	2340,000
GR	947,000	2527,000	944,000	949,000	2746,000	949,000	2975,000	949,000	3069,000
GR	949,000	3085,000	951,000	951,000	3232,000	951,000	3280,000	951,000	3364,000
GR	951,000	3387,000	951,000	951,000	3680,000	952,000	3710,000	973,000	3710,000
GR	973,000	3746,000	952,000	952,000	3840,000	952,000	4045,000	956,000	4245,000
GR	954,000	4467,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	6,000	.050	1800,000	2380,000	.050	3838,000	.035	3940,000	.055
NH	8540,000	.050	6107,000	0,000	0,000	0,000	0,000	0,000	0,000
ET	0,000	0,000	0,000	0,000	0,000	0,000	3763,770	3964,570	0,000



X1	871.100	51.000	3672.000	3990.000	771.000	771.000	0.000	0.000	0.000	0.000
GR	973.000	0.000	973.000	190.000	966.000	961.000	961.000	961.000	961.000	660.000
GR	961.000	850.000	961.000	1100.000	961.000	1360.000	1360.000	1540.000	1540.000	1787.000
GR	959.000	1800.000	959.000	1840.000	959.000	1920.000	1920.000	1958.000	1958.000	2030.000
GR	958.000	2280.000	958.000	2380.000	958.000	2500.000	2500.000	2680.000	2680.000	2816.000
GR	955.000	3010.000	952.000	3121.000	952.000	3248.000	3248.000	3374.000	3374.000	3398.000
GR	949.000	3419.000	947.000	3527.000	939.000	3672.000	3648.000	3930.000	3876.000	3876.000
GR	942.000	3882.000	946.000	3924.000	930.000	3930.000	3940.000	3940.000	4100.000	4100.000
GR	946.000	4325.000	946.000	4361.000	946.000	4460.000	4460.000	4580.000	4585.000	4585.000
GR	948.000	4597.000	946.000	4681.000	946.000	4760.000	4760.000	4775.000	4930.000	4930.000
GR	954.000	5163.000	954.000	5330.000	954.000	5420.000	5420.000	5600.000	5840.000	5840.000
GR	954.000	6107.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.055	3760.000	0.000	3842.000	0.000	0.000	3929.000	4000.000	4000.000
NH	6073.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000	0.000

X1	871.200	64.000	3882.000	3929.000	53.000	53.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	974.000	0.000	974.000	80.000	974.000	974.000	966.000	966.000	939.300	939.300
GR	962.000	790.000	962.000	950.000	962.000	1175.000	1175.000	1330.000	1330.000	1499.000
GR	982.000	1500.000	982.000	1580.000	961.000	1581.000	1581.000	1685.000	1685.000	1910.000
GR	959.000	2170.000	959.000	2395.000	959.000	2515.000	2515.000	2702.000	2702.000	2958.000
GR	954.000	3032.000	952.000	3131.000	952.000	3227.000	3227.000	3382.000	3382.000	3399.000
GR	951.000	3420.000	951.000	3641.000	949.000	3697.000	3697.000	3799.000	3799.000	3673.000
GR	936.900	3760.000	936.000	3826.000	939.400	3842.000	3842.000	3842.100	3930.200	3851.000
GR	928.600	3858.000	928.500	3860.000	927.200	3882.300	3883.300	3883.300	3928.900	3887.800
GR	927.200	3888.800	928.900	3917.000	929.100	3918.000	3918.000	3924.000	391.200	3928.900
GR	919.300	3929.900	921.400	4000.000	942.000	4020.000	4020.000	4119.000	4119.000	455.000
GR	955.000	4160.000	942.000	4161.000	942.000	4335.000	4335.000	4417.000	4417.000	450.000
GR	945.000	4530.000	946.000	4569.000	949.000	4743.000	4743.000	4800.000	4800.000	4945.000
GR	954.000	5213.000	954.000	5440.000	954.000	5720.000	5720.000	6073.000	6073.000	0.000
NH	3.000	.050	3779.000	0.000	3866.000	0.000	0.000	5979.000	0.000	0.000
NH	1.250	1.500	3.000	0.000	87.000	6.300	6.300	874.800	928.600	928.600
ET	0.000	0.000	0.000	8.100	0.000	0.000	0.000	0.000	3066.000	3066.000

X1	871.400	62.000	3779.000	3866.000	28.510	28.510	0.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	939.800	942.900	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RT	31.000	0.000	471.000	0.000	126.000	971.000	971.000	127.000	989.000	0.000
RT	184.000	989.000	0.000	185.000	971.000	0.000	0.000	969.000	0.000	540.000
RT	969.000	0.000	760.000	966.000	0.000	1020.000	959.000	0.000	2750.000	959.000
RT	0.000	2820.000	958.000	0.000	3000.000	957.000	0.000	3200.000	953.000	0.000
RT	3365.000	953.000	0.000	3440.000	947.000	0.000	0.000	946.000	0.000	3590.000
RT	943.000	0.000	3770.000	943.000	0.000	3779.000	944.700	939.400	3866.000	944.700
RT	939.400	3867.000	943.000	0.000	3940.000	942.000	0.000	4325.000	942.000	0.000
RT	4335.000	943.000	0.000	4420.000	943.000	0.000	0.000	946.000	0.000	4690.000
RT	947.000	0.000	4815.000	947.000	0.000	5030.000	952.000	0.000	5200.000	954.000
RT	0.000	5979.000	954.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	971.000	0.000	971.000	75.000	971.000	127.000	0.000	127.000	989.000	184.000
GR	971.000	184.000	969.000	308.000	969.000	538.000	966.000	757.000	959.000	1018.000

GR	959,000	1150,000	959,000	1380,000	1605,000	959,000	1875,000	959,000	2050,000
GR	959,000	2221,000	959,000	2027,000	2537,000	959,000	2640,000	959,000	2655,000
GR	959,000	2788,000	959,000	2824,000	3003,000	959,000	3204,000	959,000	3362,000
GR	947,000	3480,000	946,000	3531,000	3595,000	941,000	3625,000	941,000	3720,000
GR	941,000	3786,000	939,400	3779,000	3779,100	930,200	3788,000	929,100	3793,000
GR	928,600	3795,000	927,200	3819,300	3820,300	939,600	3824,800	927,200	3825,800
GR	928,900	3854,000	929,200	3856,000	3861,000	931,200	3865,900	939,300	3866,000
GR	933,000	3912,000	942,000	3931,000	3942,000	942,000	4005,000	942,000	4195,000
GR	942,000	4325,000	943,000	4336,000	4421,000	946,000	4563,000	947,000	4689,000
GR	947,000	4740,000	947,000	4815,000	5032,000	954,000	5199,000	954,000	5340,000
GR	954,000	5615,000	954,000	5979,000	0,000	0,000	0,000	0,000	0,000
NH	3,000	.050	3741,000	.035	3959,000	3959,000	0,000	0,000	0,000
ET	0,000	0,000	0,000	8,100	0,000	0,000	3747,580	3984,790	0,000

X1	871,500	57,000	3741,000	3959,000	53,000	53,000	0,000	0,000	0,000
GR	972,000	0,000	972,000	90,000	143,000	989,000	143,000	989,000	201,000
GR	972,000	201,000	970,000	307,000	566,000	969,000	812,000	960,000	1041,000
GR	958,000	1181,000	958,000	1319,000	1650,000	958,000	1960,000	958,000	2184,000
GR	958,000	2501,000	958,000	2660,000	2675,000	957,000	2821,000	955,000	2978,000
GR	954,000	3105,000	953,000	3219,000	3381,000	948,000	3429,000	948,000	3506,000
GR	947,000	3549,000	940,000	3650,000	3690,000	940,000	3704,000	940,000	3741,000
GR	930,000	3783,000	927,300	3788,000	3850,000	930,000	3855,000	932,000	3869,000
GR	932,000	3909,000	941,000	3959,000	4000,000	941,000	4040,000	941,000	4190,000
GR	941,000	4327,000	945,000	4328,000	4494,000	946,000	4545,000	946,000	4630,000
GR	946,000	4708,000	956,000	4708,000	4740,000	947,000	4740,000	947,000	4815,000
GR	950,000	4967,000	952,000	5055,000	5195,000	955,000	5250,000	955,000	5460,000
GR	955,000	5730,000	955,000	5971,000	0,000	0,000	0,000	0,000	0,000
NH	3,000	.050	3474,000	.035	3789,000	3789,000	0,000	0,000	0,000
ET	0,000	0,000	0,000	8,100	0,000	0,000	3571,080	3733,360	0,000

X1	872,100	41,000	3874,000	3749,000	269,000	269,000	0,000	0,000	0,000
GR	972,000	0,000	972,000	80,000	134,000	987,000	134,000	987,000	171,000
GR	972,000	171,000	969,000	302,000	544,000	966,000	764,000	959,000	1003,000
GR	957,000	1105,000	957,000	1380,000	1650,000	957,000	1870,000	957,000	1920,000
GR	957,000	2101,000	955,000	2261,000	2501,000	954,000	2747,000	952,000	2995,000
GR	951,000	3190,000	950,000	3332,000	3474,000	937,000	3606,000	930,000	3634,000
GR	928,000	3638,000	928,000	3690,000	3694,000	942,000	3749,000	943,000	3796,000
GR	943,000	3807,000	943,000	3820,000	4060,000	943,000	4140,000	946,000	4404,000
GR	950,000	4653,000	952,000	4764,000	4980,000	952,000	5230,000	952,000	5450,000
GR	952,000	5709,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	3,000	.050	3606,000	.035	3706,000	3680,000	0,000	0,000	0,000
ET	0,000	0,000	0,000	8,100	0,000	0,000	3608,590	3706,000	0,000

X1	872,200	65,000	3606,000	3706,000	53,000	53,000	0,000	0,000	0,000
X3	10,000	0,000	0,000	0,000	0,000	0,000	941,000	941,000	0,000
GR	972,000	0,000	972,000	80,000	129,000	987,000	129,000	987,000	172,000
GR	972,000	182,000	969,000	347,000	603,000	964,000	860,000	958,000	1116,000
GR	957,000	1145,000	957,000	1420,000	1650,000	957,000	1810,000	957,000	2000,000
GR	957,000	2131,000	955,000	2302,000	2557,000	954,000	2674,000	954,000	2686,000
GR	953,000	2921,000	950,000	3083,000	3169,000	948,000	3335,000	943,000	3475,000
GR	937,000	3597,000	940,000	3606,000	3606,100	939,700	3608,000	937,100	3609,000

RR	936.700	3612.500	932.000	3623.000	930.600	3626.000	928.200	3637.400	946.000	3637.400
GR	940.000	3638.600	928.200	3638.700	928.400	3654.500	928.300	3669.000	928.200	3674.900
RR	940.000	3674.500	940.000	3674.100	928.200	3676.200	928.500	3680.000	930.600	3683.000
GR	937.600	3700.000	937.700	3703.500	939.700	3704.000	939.700	3706.000	940.000	3706.000
GR	942.000	3727.000	944.000	3769.000	944.000	3788.000	944.000	3800.000	944.000	4000.000
GR	944.000	4200.000	944.000	4365.000	944.000	4463.000	951.000	4746.000	951.000	4973.000
GR	951.000	5125.000	951.000	5298.000	952.000	5498.000	952.000	5580.000	952.000	5680.000
NH	5.000	.050	3230.000	.055	3309.000	.035	3409.000	.055	3420.000	.050
NH	6270.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SB	.950	1.500	3.000	0.000	37.000	2.300	833.500	2.500	927.400	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	0.000	3311.490	3406.680	0.000

X1	872.400	66.000	3309.000	3409.000	44.350	44.350	44.350	0.000	0.000	0.000
X2	0.000	0.000	1.000	940.000	943.700	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	943.700	943.700	0.000
RT	25.000	0.000	972.000	0.000	260.000	969.000	0.000	530.000	968.000	0.000
RT	990.000	956.000	0.000	1950.000	956.000	0.000	1975.000	957.000	0.000	2160.000
RT	954.000	0.000	2260.000	953.000	0.000	2600.000	953.000	0.000	2660.000	954.000
RT	0.000	2970.000	952.000	0.000	3110.000	945.000	0.000	3130.000	943.700	0.000
RT	3308.000	943.700	0.000	3309.000	945.600	940.000	3409.000	945.600	940.000	3410.000
RT	943.700	0.000	4000.000	943.700	0.000	4045.000	946.000	0.000	4350.000	951.000
RT	0.000	4940.000	956.000	0.000	5290.000	956.000	0.000	5460.000	958.000	0.000
RT	6080.000	958.000	0.000	6270.000	961.000	0.000	0.000	0.000	0.000	0.000
GR	972.000	0.000	969.000	254.000	968.000	527.000	961.000	782.000	956.000	990.000
GR	956.000	1250.000	956.000	1500.000	956.000	1740.000	956.000	1950.000	957.000	1973.000
GR	954.000	2194.000	953.000	2264.000	953.000	2300.000	953.000	2450.000	953.000	2600.000
GR	954.000	2655.000	953.000	2808.000	952.000	2965.000	949.000	3020.000	945.000	3111.000
GR	943.000	3133.000	943.000	3250.000	943.000	3250.000	943.000	3277.000	940.000	3309.000
GR	939.700	3309.100	939.700	3311.000	937.100	3312.000	936.700	3315.500	930.600	3329.000
GR	929.500	3339.000	928.200	3340.400	940.000	3340.400	940.000	3341.600	928.200	3341.700
GR	928.400	3347.500	928.100	3363.000	928.200	3377.900	940.000	3377.900	940.000	3379.100
GR	928.200	3379.200	928.500	3383.000	930.600	3386.000	937.600	3403.000	937.700	3406.500
GR	939.700	3407.000	939.700	3409.000	940.000	3409.000	940.000	3420.000	943.700	3435.000
GR	947.000	4108.000	948.000	4174.000	943.700	4352.000	956.000	4944.000	956.000	5050.000
GR	956.000	5295.000	956.000	5468.000	958.000	5651.000	958.000	5800.000	958.000	6085.000
GR	961.000	6270.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	3254.000	.035	3359.000	.055	3420.000	.050	5620.000	.055
NH	6234.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000	0.000

X1	872.500	48.000	3258.000	3359.000	53.000	53.000	53.000	0.000	0.000	0.000
GR	970.000	0.000	969.000	298.000	966.000	562.000	959.000	803.000	956.000	935.000
GR	956.000	1200.000	956.000	1550.000	956.000	1900.000	956.000	2027.000	952.000	2241.000
GR	952.000	2370.000	942.000	2440.000	952.000	2457.000	951.000	2520.000	951.000	2650.000
GR	951.000	2726.000	949.000	2845.000	947.000	2964.000	943.000	3034.000	943.000	3060.000
GR	943.000	3140.000	943.000	3165.000	943.000	3198.000	934.000	3225.000	934.000	3250.000
GR	934.000	3254.000	930.000	3279.000	928.500	3282.000	928.500	3310.000	930.000	3313.000
GR	935.000	3359.000	935.000	3400.000	935.000	3420.000	935.000	3500.000	937.000	3633.000
GR	937.000	3734.000	940.000	3853.000	946.000	3988.000	946.000	4075.000	949.000	4230.000
GR	951.000	4307.000	946.000	4473.000	956.000	5154.000	958.000	5423.000	958.000	5620.000
GR	958.000	5629.000	957.000	5897.000	961.000	6234.000	0.000	0.000	0.000	0.000

GT	9,000	6540,000	3990,000	1770,000	0,000	0,000	0,000	0,000
NH	9,000	.055	890,000	.055	3975,000	.050	3727,000	.035
NH	4075,000	.055	4110,000	.050	4580,000	.050	7644,000	0,000
XT	873,000	55,000	3727,000	1330,000	1330,000	0,000	0,000	0,000
CR	973,000	0,000	973,000	500,000	973,000	750,000	973,000	850,000
CR	973,000	933,000	971,000	1444,000	964,000	1726,000	956,000	2009,000
CR	956,000	2100,000	956,000	2303,000	970,000	2303,000	970,000	2344,000
CR	956,000	2345,000	954,000	2574,000	953,000	2650,000	953,000	2830,000
CR	953,000	2900,000	953,000	3021,000	952,000	3038,000	950,400	3250,000
CR	950,000	3301,000	946,000	3575,000	946,000	3700,000	936,000	3727,000
CR	931,000	3735,000	931,000	3773,000	934,000	3801,000	935,000	3906,000
CR	934,000	3986,000	936,000	4110,000	942,000	4252,000	945,200	4370,000
CR	949,000	4508,000	949,000	4873,000	951,000	5124,000	954,000	5406,000
CR	958,000	5746,000	958,000	6098,000	962,000	6253,000	959,000	6380,000
CR	959,000	6520,000	960,000	6989,000	962,000	7323,000	964,000	7644,000
NH	5,000	.050	3620,000	4584,000	4584,000	.055	4620,000	.050
NH	7137,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
FT	0,000	0,000	0,000	0,000	0,000	4368,000	4542,590	0,000

XT	874,000	56,000	4368,000	2101,000	2101,000	0,000	0,000	0,000
CR	969,000	0,000	966,000	254,000	964,000	273,000	962,000	298,000
CR	961,000	370,000	961,000	800,000	961,000	1000,000	961,000	1200,000
CR	961,000	1000,000	961,000	1873,000	956,000	2185,000	956,000	2400,000
CR	956,000	2700,000	956,000	2949,000	954,000	2976,000	952,000	3092,000
CR	967,000	3092,000	967,000	3160,000	951,000	3226,000	950,000	3285,000
CR	948,000	3522,000	947,300	3802,000	946,000	3900,000	946,000	4100,000
CR	906,000	4143,000	943,000	4368,000	934,000	4388,000	932,000	4392,000
CR	932,000	4412,000	934,000	4439,000	941,000	4504,000	941,000	4600,000
CR	941,000	4620,000	941,000	4828,000	953,000	5104,000	957,000	5259,000
CR	972,000	5260,000	972,000	5321,000	959,000	5343,000	960,000	5507,000
CR	963,000	5687,000	963,000	6200,000	963,000	6500,000	963,000	6843,000
CR	964,000	7137,000	0,000	0,000	0,000	0,000	0,000	0,000
NH	6,000	.050	3940,000	4044,000	4044,000	.050	5930,000	.050
NH	6530,000	.055	6995,000	0,000	0,000	0,000	0,000	0,000
FT	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000

XT	875,100	54,000	3969,000	1172,100	1172,100	0,000	0,000	0,000
CR	971,000	0,000	970,000	145,000	966,000	428,000	963,000	430,000
CR	963,000	700,000	963,000	1200,000	963,000	1500,000	963,000	1838,000
CR	957,000	2228,000	956,000	2330,000	956,000	2750,000	956,000	2940,000
CR	956,000	3000,000	956,000	3248,000	953,000	3272,000	951,000	3310,000
CR	951,000	3349,000	951,000	3430,000	951,000	3498,000	948,000	3621,000
CR	947,000	3670,000	947,000	3796,000	939,000	3969,000	936,000	3980,000
CR	933,500	3945,000	933,500	4024,000	940,000	4084,000	940,000	4060,000
CR	941,000	4240,000	946,000	4498,000	969,000	4529,000	946,000	4529,000
CR	946,000	4550,000	946,000	4625,000	949,000	5084,000	948,500	5200,000
CR	956,000	5313,000	957,000	5886,000	960,000	5930,000	964,000	6116,000
CR	964,000	6507,000	964,000	6720,000	964,000	6955,000	964,000	0,000
NH	4,000	.050	3948,000	4008,700	4008,700	.055	5910,000	.050
NH	6720,000	.055	6952,000	0,000	0,000	0,000	0,000	0,000

X1	875.200	49.000	3999.300	4008.700	53.000	53.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CR	971.000	0.000	970.000	145.000	966.000	966.000	966.000	966.000	963.000	963.000	963.000	430.000
CR	963.000	750.000	963.000	1000.000	956.000	956.000	956.000	956.000	963.000	963.000	963.000	1838.000
CR	957.000	2228.000	956.000	2330.000	956.000	956.000	956.000	956.000	956.000	956.000	956.000	3000.000
CR	956.000	3037.000	953.000	3248.000	948.000	948.000	948.000	948.000	951.000	951.000	951.000	3349.000
CR	951.000	3423.000	951.000	3526.000	948.000	948.000	948.000	948.000	947.000	947.000	947.000	3750.000
CR	947.000	3815.000	938.000	3950.000	936.000	936.000	936.000	936.000	942.100	942.100	942.100	3959.400
CR	934.100	3984.000	934.000	4001.000	933.900	933.900	933.900	933.900	942.100	942.100	942.100	4019.000
CR	941.000	4047.000	941.000	4323.000	946.000	946.000	946.000	946.000	951.000	951.000	951.000	5160.000
CR	953.600	5220.000	946.000	5310.000	957.000	957.000	957.000	957.000	961.000	961.000	961.000	6106.000
CR	964.000	6849.000	964.000	6650.000	964.000	964.000	964.000	964.000	964.000	964.000	964.000	0.000
NH	3.000	.050	3921.300	3970.700	3970.700	3970.700	3970.700	3970.700	6952.000	6952.000	6952.000	0.000
SB	0.000	1.500	3.000	0.000	50.700	50.700	50.700	50.700	382.500	382.500	382.500	934.600

X1	875.400	56.000	3921.300	3970.700	17.950	17.950	17.950	17.950	0.000	0.000	0.000	0.000
X2	0.000	0.000	1.000	942.100	943.000	943.000	943.000	943.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AT	33.000	0.000	972.000	0.000	34.000	34.000	34.000	34.000	971.000	971.000	971.000	0.000
AT	70.000	998.000	0.000	71.000	971.000	971.000	971.000	971.000	160.000	160.000	160.000	360.000
AT	966.000	0.000	400.000	964.000	0.000	0.000	0.000	0.000	964.000	964.000	964.000	963.000
AT	0.000	1880.000	963.000	0.000	2090.000	2090.000	2090.000	2090.000	954.000	954.000	954.000	0.000
AT	2310.000	956.000	0.000	2490.000	954.000	954.000	954.000	954.000	3054.000	3054.000	3054.000	3055.000
AT	972.000	0.000	3110.000	972.000	0.000	0.000	0.000	0.000	954.000	954.000	954.000	952.000
AT	3700.000	947.000	952.000	0.000	3420.000	3420.000	3420.000	3420.000	0.000	0.000	0.000	0.000
AT	947.200	5800.000	3971.000	944.000	944.000	944.000	944.000	944.000	3021.300	3021.300	3021.300	3970.700
AT	0.000	0.000	998.000	0.000	6060.000	6060.000	6060.000	6060.000	943.000	943.000	943.000	946.000
CR	972.000	0.000	971.000	33.000	998.000	998.000	998.000	998.000	0.000	0.000	0.000	0.000
CR	968.000	159.000	966.000	354.000	964.000	964.000	964.000	964.000	435.000	435.000	435.000	70.000
CR	964.000	469.000	964.000	486.000	963.000	963.000	963.000	963.000	963.000	963.000	963.000	451.000
CR	963.000	1400.000	963.000	1680.000	963.000	963.000	963.000	963.000	800.000	800.000	800.000	1100.000
CR	956.000	2290.000	956.000	2314.000	954.000	954.000	954.000	954.000	2093.000	2093.000	2093.000	2190.000
CR	954.000	2950.000	954.000	3056.000	972.000	972.000	972.000	972.000	2620.000	2620.000	2620.000	2800.000
CR	952.000	3255.000	952.000	3360.000	952.000	952.000	952.000	952.000	3111.000	3111.000	3111.000	3111.000
CR	946.000	3706.000	940.000	3902.000	942.100	942.100	942.100	942.100	3585.000	3585.000	3585.000	3681.000
CR	934.100	3946.000	933.900	3969.000	933.900	933.900	933.900	933.900	3921.400	3921.400	3921.400	3422.000
CR	941.000	4028.000	943.000	4332.000	946.000	946.000	946.000	946.000	3970.700	3970.700	3970.700	3995.000
CR	956.000	5555.000	956.000	5802.000	965.000	965.000	965.000	965.000	4853.000	4853.000	4853.000	5214.000
CR	965.000	6952.000	0.000	0.000	0.000	0.000	0.000	0.000	6300.000	6300.000	6300.000	6600.000
NH	3.000	.050	3912.000	3976.000	3976.000	3976.000	3976.000	3976.000	0.000	0.000	0.000	0.000

X1	875.500	57.000	3912.000	3976.000	53.000	53.000	53.000	53.000	0.000	0.000	0.000	0.000
CR	972.000	0.000	971.000	33.000	998.000	998.000	998.000	998.000	998.000	998.000	998.000	70.000
CR	968.000	159.000	966.000	359.000	964.000	964.000	964.000	964.000	480.000	480.000	480.000	451.000
CR	964.000	469.000	964.000	486.000	963.000	963.000	963.000	963.000	800.000	800.000	800.000	1100.000
CR	963.000	1400.000	963.000	1700.000	963.000	963.000	963.000	963.000	2093.000	2093.000	2093.000	2190.000
CR	956.000	2260.000	956.000	2314.000	954.000	954.000	954.000	954.000	2600.000	2600.000	2600.000	2800.000
CR	954.000	3000.000	954.000	3056.000	972.000	972.000	972.000	972.000	3111.000	3111.000	3111.000	3111.000
CR	951.000	3334.000	951.000	3416.000	949.000	949.000	949.000	949.000	3659.000	3659.000	3659.000	3685.000





80/10/10, 06.34.50.

Y1	879.900	57.000	4999.000	881.760	881.760	0.000	0.000	0.000	0.000
Y5	6.000	954.750	954.620	953.300	953.300	0.000	0.000	0.000	0.000
CR	978.000	0.000	978.000	355.000	355.000	600.000	977.000	977.000	761.000
CR	974.000	1069.000	1200.000	1400.000	1400.000	1600.000	974.000	974.000	1663.000
CR	970.000	1663.000	990.000	1714.000	1714.000	1833.000	974.000	974.000	1851.000
CR	973.900	1860.000	973.000	2184.000	2184.000	2460.000	969.000	969.000	2706.000
CR	956.000	2978.000	954.000	3250.000	3250.000	3050.000	954.000	954.000	3601.000
CR	954.000	3828.000	953.000	4050.000	4050.000	4184.000	953.000	952.000	4431.000
CR	943.500	4692.000	948.000	4959.000	4959.000	5030.000	948.000	943.500	5032.000
CR	953.000	5052.000	944.000	5092.000	5092.000	5309.000	949.000	949.000	5422.000
CR	962.000	5553.000	958.000	5793.000	5793.000	5928.000	962.000	962.000	6060.000
CR	970.000	6250.000	972.000	6729.000	6729.000	6736.000	963.000	963.000	6957.000
CR	981.000	7177.000	972.000	7660.000	7660.000	7870.000	972.000	970.000	8254.000
NC	0.000	8527.000	8900.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	4.000	0.000	2740.000	0.000	0.000	0.000	0.000	0.000	0.000
		.055	.050	5003.000	5003.000	.050	5263.000	5263.000	8803.000

Y1	880.100	57.000	5003.000	639.000	639.000	0.000	0.000	0.000	0.000
Y5	6.000	957.320	956.280	955.010	955.010	0.000	0.000	0.000	0.000
CR	976.000	0.000	978.000	643.000	643.000	700.000	976.000	976.000	950.000
CR	986.000	1200.000	1380.000	1550.000	1550.000	1600.000	976.000	973.000	1762.000
CR	970.000	1762.000	986.000	1800.000	1800.000	1930.000	972.000	972.000	1958.000
CR	957.000	2114.000	966.000	2629.000	2629.000	2740.000	957.000	957.000	2760.000
CR	951.000	3000.000	957.000	3600.000	3600.000	3900.000	957.000	957.000	4115.000
CR	949.000	4027.000	957.000	4460.000	4460.000	4532.000	957.000	954.500	4736.000
CR	950.000	5003.000	945.500	5037.000	5037.000	5073.000	945.500	945.500	5075.000
CR	950.000	5099.000	950.000	5263.000	5263.000	5450.000	950.000	950.000	5500.000
CR	970.000	5514.000	954.000	5720.000	5720.000	5936.000	962.000	971.000	6200.000
CR	963.000	6275.000	968.000	6491.000	6491.000	6700.000	958.000	958.000	6895.000
CR	986.000	7080.000	986.000	7285.000	7285.000	7926.000	979.000	986.000	8258.000
NH	4.000	8500.000	8803.000	0.000	0.000	0.000	0.000	0.000	0.000
		.055	.050	5001.000	5001.000	.050	5078.000	5078.000	8804.000

Y1	880.200	62.000	5001.000	53.000	53.000	0.000	0.000	0.000	0.000
Y5	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CR	980.000	957.740	997.480	955.060	955.060	953.800	953.100	953.100	0.000
CR	976.000	0.000	979.000	553.000	553.000	595.000	976.000	976.000	860.000
CR	972.000	1100.000	976.000	1400.000	1400.000	1558.000	973.000	972.000	1939.000
CR	957.000	1959.000	970.000	2332.000	2332.000	2606.000	957.000	957.000	2730.000
CR	957.000	2750.000	957.000	3300.000	3300.000	3600.000	957.000	957.000	3900.000
CR	951.200	4200.000	957.000	4736.000	4736.000	4979.000	953.000	953.000	5001.000
CR	953.600	5001.100	950.600	5015.000	5015.000	5070.000	944.800	945.800	5023.000
CR	946.500	5023.300	943.600	5024.800	5024.800	5039.000	945.100	945.600	5045.000
CR	948.500	5053.200	943.300	5054.700	5054.700	5054.800	944.500	946.500	5061.000
CR	951.000	5065.000	950.500	5077.900	5077.900	5078.000	953.100	949.000	5084.000
CR	964.000	5367.000	953.000	5791.000	5791.000	6067.000	967.000	972.000	6286.000
CR	967.000	6046.000	960.000	6700.000	6700.000	6995.000	958.000	962.000	7127.000
CR	986.000	7383.000	972.000	7887.000	7887.000	8133.000	984.000	986.000	8371.000
NH	5.000	8550.000	8804.000	0.000	0.000	0.000	0.000	0.000	0.000
		.050	.055	3000.000	3000.000	.050	5091.000	5091.000	8804.000

NH	AA02.000	0.000	0.000	0.000	0.000	436.700	0.000	0.000	0.000	945.000
NH	1.150	1.500	0.000	29.500	3.800	0.000	0.000	0.000	2.700	945.000
FT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5014.050	0.000
<b>2t 161</b>										
Y1	880.000	83.000	5091.000	41.180	41.180	41.180	0.000	0.000	0.000	0.000
X2	0.000	0.000	953.800	0.000	0.000	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	955.700	0.000
Y5	6.000	958.050	957.760	956.230	955.480	0.000	0.000	0.000	0.000	0.000
AT	38.000	0.000	979.000	300.000	977.000	0.000	0.000	0.000	1560.000	0.000
AT	1754.000	973.000	1755.000	988.000	0.000	1795.000	0.000	0.000	986.000	1796.000
AT	973.000	0.000	1970.000	0.000	2295.000	968.000	0.000	0.000	0.000	962.000
AT	0.000	2650.000	958.000	4660.000	958.000	0.000	0.000	0.000	4750.000	0.000
AT	5013.000	955.700	5014.000	957.200	953.800	5091.000	0.000	0.000	956.500	5092.000
AT	955.000	0.000	5290.000	0.000	955.000	955.000	0.000	0.000	6220.000	971.000
AT	0.000	6350.000	971.000	6370.000	972.000	0.000	0.000	0.000	0.000	0.000
AT	6585.000	958.000	7063.000	958.000	0.000	7340.000	0.000	0.000	966.000	0.000
AT	971.000	0.000	980.000	0.000	8039.000	983.000	0.000	0.000	8040.000	999.000
AT	0.000	8070.000	999.000	8071.000	984.000	0.000	0.000	0.000	986.000	0.000
AT	8130.000	1002.000	0.000	1002.000	0.000	8201.000	0.000	0.000	0.000	8410.000
AT	988.000	0.000	988.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	979.000	0.000	977.000	977.000	500.000	977.000	700.000	977.000	977.000	900.000
GR	977.000	1100.000	977.000	977.000	1500.000	977.000	1561.000	973.000	973.000	1756.000
GR	986.000	1756.000	986.000	973.000	1795.000	973.000	1952.000	973.000	973.000	1969.000
GR	972.500	2000.000	968.000	962.000	2558.000	958.000	2650.000	958.000	958.000	2900.000
GR	958.000	3000.000	958.000	958.000	3300.000	958.000	3500.000	958.000	958.000	3700.000
GR	958.000	3900.000	958.000	958.000	4150.000	958.000	4685.000	958.000	958.000	4660.000
GR	956.000	4851.000	958.000	953.800	5005.000	951.200	5014.100	950.600	950.600	5014.000
GR	945.800	5033.000	945.300	945.000	5036.200	953.600	5036.300	953.600	5037.700	5037.700
GR	945.000	5037.800	945.100	945.600	5052.000	946.500	5066.200	943.300	5066.300	5066.300
GR	953.300	5067.700	946.500	946.500	5067.800	946.500	5074.000	940.500	5082.000	5082.000
GR	951.300	5090.900	953.100	954.000	5091.000	954.000	5150.000	954.000	5400.000	5400.000
GR	954.000	5600.000	954.000	963.000	5767.000	971.000	6221.000	971.000	6240.000	6240.000
GR	971.000	6350.000	972.000	970.000	6370.000	963.000	6542.000	958.000	6585.000	6585.000
GR	958.000	6800.000	958.000	959.000	7065.000	966.000	7341.000	971.000	7602.000	7602.000
GR	980.000	7891.000	981.500	999.000	8039.000	999.000	8070.000	984.400	8071.000	8071.000
GR	986.000	8129.000	1002.000	1002.000	8129.000	986.000	8203.000	988.000	8411.000	8411.000
GR	988.000	8570.000	988.000	988.000	8660.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	0.000	0.100	0.000	0.000	0.000	0.000	0.000
NH	5.000	0.050	2000.000	3000.000	0.050	4995.000	0.000	0.000	5279.000	0.050
NH	8780.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000
<b>2t 161</b>										
Y1	880.500	65.000	5279.000	53.000	53.000	53.000	0.000	0.000	0.000	0.000
X5	6.000	958.150	957.830	957.650	955.270	0.000	0.000	0.000	0.000	0.000
GR	979.800	0.000	305.000	978.000	500.000	978.000	700.000	978.000	978.000	900.000
GR	970.000	1100.000	978.000	978.000	1542.000	978.000	1778.000	986.000	986.000	1778.000
GR	986.000	1811.000	974.000	973.000	1961.000	973.000	1979.000	973.000	972.000	2000.000
GR	971.000	2177.000	974.000	963.000	2501.000	959.000	2605.000	959.000	2800.000	2800.000
GR	957.000	3000.000	959.000	959.000	3400.000	959.000	3600.000	959.000	3800.000	3800.000
GR	957.000	4000.000	959.000	959.000	4050.000	959.000	4651.000	959.000	4665.000	4665.000
GR	957.000	4830.000	957.000	950.000	4995.000	945.500	5080.000	945.000	5082.000	5082.000
GR	945.000	5083.000	945.500	950.000	5126.000	952.000	5279.000	952.000	5531.000	5531.000





GR	954.000	5792.000	6019.000	970.000	6202.000	972.000	6286.000	972.000	6303.000
GR	973.000	6365.000	1003.000	1003.000	6591.000	973.000	6391.000	970.000	6488.000
GR	962.000	6543.000	958.000	958.000	6780.000	958.000	6985.000	960.000	7026.000
GR	960.000	7070.000	960.000	965.000	7305.000	972.000	7576.000	977.000	7783.000
GR	984.000	8011.000	988.000	990.000	8391.000	990.000	8580.000	990.000	8784.000
NH	6.000	.050	2324.000	2590.000	.035	2761.000	.055	2840.000	.050
NH	5200.000	.055	6237.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	8.100	0.000	0.000	0.000	2381.920	2852.000	0.000

X1	881.000	50.000	2324.000	982.000	982.000	982.000	0.000	0.000	0.000
X5	6.000	958.300	957.920	957.720	956.790	0.000	0.000	0.000	0.000
GR	966.000	0.000	100.000	966.000	221.000	963.000	487.000	962.000	725.000
GR	962.000	800.000	900.000	962.000	1005.000	962.000	1254.000	958.000	1459.000
GR	956.000	1550.000	1700.000	956.000	1900.000	956.000	2031.000	955.000	2100.000
GR	955.000	2250.000	2324.000	950.600	2590.000	950.000	2624.000	949.000	2653.000
GR	947.000	2654.000	2675.000	949.000	2676.000	951.000	2704.000	953.000	2761.000
GR	952.000	2770.000	2835.000	952.600	2840.000	954.000	2852.000	954.000	3079.000
GR	957.000	3343.000	3592.000	959.000	3640.000	958.000	3900.000	958.000	4150.000
GR	958.000	4375.000	4462.000	970.000	4664.000	979.000	4852.000	978.000	5077.000
GR	978.000	5200.000	5344.000	970.000	5500.000	978.000	5680.000	979.000	5704.000
GR	979.000	5818.000	5847.000	980.000	5892.000	980.000	6089.000	980.000	6257.000
NH	5.000	.050	2795.000	2900.000	.055	3131.000	.050	4520.000	.055
NH	6231.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000	0.000

X1	882.000	48.000	2795.000	1294.000	1294.000	1294.000	0.000	0.000	0.000
X5	6.000	958.300	957.920	957.720	956.790	0.000	0.000	0.000	0.000
GR	973.000	0.000	973.000	973.000	140.000	987.000	140.000	987.000	198.000
GR	973.000	198.000	971.000	971.000	500.000	971.000	584.000	985.000	827.000
GR	965.000	970.000	1091.000	961.000	1274.000	961.000	1380.000	961.000	1550.000
GR	961.000	1760.000	1835.000	959.000	1949.000	957.000	2207.000	956.000	2320.000
GR	956.000	2600.000	2712.000	956.000	2795.000	949.000	2827.000	948.000	2829.000
GR	988.000	2844.000	2846.000	952.000	2870.000	952.200	2900.000	954.000	3131.000
GR	954.000	3260.000	3435.000	956.000	3563.000	956.000	3700.000	956.000	3900.000
GR	956.000	4155.000	4246.000	964.000	4386.000	964.000	4480.000	964.000	4495.000
GR	966.000	4916.000	4520.000	973.000	4647.000	973.000	4785.000	973.000	5141.000
GR	975.000	5501.000	5929.000	976.000	6231.000	0.000	0.000	0.000	0.000
NH	4.000	.050	2820.000	2960.000	.055	3138.000	.050	5086.000	0.000

X1	883.000	44.000	2820.000	1653.000	1653.000	1653.000	0.000	0.000	0.000
X5	6.000	959.360	958.570	958.140	957.100	0.000	0.000	0.000	0.000
GR	982.000	0.000	100.000	982.000	217.000	981.000	427.000	980.000	606.000
GR	979.000	664.000	783.000	974.000	877.000	974.000	1100.000	974.000	1300.000
GR	974.000	1500.000	1700.000	974.000	1964.000	970.000	2246.000	969.000	2551.000
GR	967.000	2604.000	2604.000	997.000	2664.000	967.000	2664.000	967.000	2710.000
GR	958.000	2820.000	2849.000	951.000	2847.000	951.000	2869.000	953.000	2871.000
GR	956.000	2825.000	2960.000	958.000	3138.000	960.000	3321.000	963.000	3497.000
GR	970.000	3569.000	3703.000	982.000	3871.000	985.000	4012.000	989.000	4100.000
GR	985.000	4210.000	4233.000	990.000	4442.000	991.000	4630.000	991.000	4700.000
GR	991.000	4900.000	4978.000	991.000	4994.000	991.000	5046.000	0.000	0.000
NH	4.000	.050	2580.000	2875.000	.035	2970.000	.050	4561.000	0.000

X1	884.100	46.000	2873.000	1262.060	1262.060	1262.060	0.000	0.000	0.000
GR	983.000	0.000	983.000	983.000	394.000	983.000	409.000	983.000	501.000
GR	981.000	515.000	980.000	979.000	722.000	978.000	639.000	977.000	940.000
GR	977.000	1200.000	977.000	1400.000	1550.000	977.000	1727.000	976.000	1979.000
GR	970.000	2201.000	966.000	2305.000	2535.000	966.000	2552.000	968.000	2562.000
GR	966.000	2575.000	966.000	2580.000	2680.000	966.000	2712.000	957.000	2762.000
GR	957.000	2875.000	953.000	2891.000	2893.000	952.000	2911.000	953.000	2913.000
GR	964.000	2936.000	967.000	2970.000	3107.000	966.000	3108.000	986.000	3150.000
GR	989.000	4149.000	989.000	3265.000	3338.000	981.000	3630.000	985.000	3887.000
GR	991.000	4561.000	0.000	4164.000	4231.000	991.000	4392.000	991.000	4440.000
NH	4.000	.050	2300.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	5.400	2868.000	.035	0.050	4559.000	0.000
				0.000	0.000	0.000	0.000	0.000	0.000

X1	884.200	52.000	2868.000	2906.000	53.000	53.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	959.000	0.000	0.000
GR	982.000	0.000	982.000	150.000	982.000	982.000	319.000	982.000	389.000
GR	982.000	403.000	981.000	504.000	517.000	980.000	651.000	979.000	734.000
GR	978.000	829.000	977.000	945.000	1300.000	977.000	1620.000	978.000	1729.000
GR	976.000	1951.000	971.000	2168.000	2280.000	966.000	2500.000	966.000	2505.000
GR	968.000	2549.000	968.000	2560.000	2570.000	967.000	2660.000	967.000	2702.000
GR	958.000	2763.000	958.000	2854.000	2868.000	952.700	2868.100	952.800	2876.000
GR	952.900	2886.200	952.400	2886.300	2887.700	952.900	2887.800	952.600	2898.000
GR	952.300	2985.900	952.400	2906.000	2924.000	964.000	3098.000	986.000	3099.000
GR	986.000	3143.000	964.000	3144.000	3272.000	976.000	3336.000	980.000	3477.000
GR	983.000	3709.000	986.000	3900.000	4137.000	989.000	4150.000	991.000	4351.000
GR	991.000	4400.000	991.000	4959.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	1600.000	0.055	0.000	0.000	0.000	3107.000	0.050
NH	4747.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SR	.950	1.500	3.000	0.000	1.400	249.200	0.000	952.600	0.000

Ward

X1	884.400	54.000	3069.000	3107.000	19.010	19.010	0.000	0.000	0.000
X2	0.000	0.000	1.000	959.400	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	959.000	0.000	0.000
RT	30.000	0.000	984.000	0.000	984.000	0.000	760.000	983.000	0.000
RT	940.000	980.000	0.000	1200.000	0.000	1460.000	979.000	0.000	1585.000
RT	978.000	0.000	1600.000	977.000	2020.000	977.000	0.000	2030.000	978.000
RT	0.000	2300.000	977.000	0.000	975.000	0.000	2740.000	971.000	0.000
RT	2760.000	971.000	0.000	2865.000	0.000	3000.000	959.000	0.000	3068.000
RT	961.000	0.000	3069.000	963.500	3107.000	963.500	959.400	3108.000	961.000
RT	0.000	3270.000	965.000	0.000	967.000	0.000	3460.000	967.000	0.000
RT	3490.000	968.000	0.000	3570.000	0.000	3680.000	983.000	0.000	3870.000
RT	986.000	0.000	3990.000	984.000	4480.000	992.000	0.000	4787.000	992.000
RT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
GR	984.000	0.000	984.000	180.000	984.000	984.000	399.000	984.000	466.000
GR	984.000	616.000	983.000	766.000	983.000	978.000	1203.000	979.000	1463.000
GR	978.000	1586.000	977.000	1600.000	1800.000	977.000	2020.000	978.000	2033.000
GR	977.000	2304.000	975.000	2556.000	2600.000	971.000	2742.000	971.000	2756.000
GR	960.000	2898.000	960.000	2908.000	2955.000	959.000	3030.000	959.000	3060.000
GR	959.400	3069.000	952.700	3069.100	3081.000	952.900	3087.200	959.400	3087.300

GR	959.400	3088.700	952.900	3088.800	952.700	1094.000	952.300	3106.900	959.400	3107.000
GR	958.000	3129.000	963.000	3218.000	967.000	3322.000	967.000	3560.000	967.000	3460.000
GR	968.000	3493.000	977.000	3570.000	983.000	3680.000	986.000	3870.000	984.000	3984.000
GR	984.000	3994.000	985.000	4071.000	988.000	4227.000	988.000	4240.000	992.000	4479.000
GR	992.000	4493.000	992.000	4711.000	992.000	4726.000	992.000	4747.000	0.000	0.000
NH	5.000		1600.000	.055	2640.000	.050	3712.000	.035	3820.000	.050
NH	5399.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	6.100	0.000	0.000	0.000	3650.590	3863.020	0.000

X1	884.500	54.000	3659.000	3820.000	53.000	53.000	53.000	0.000	0.000	0.000
GR	984.000	0.000	984.000	100.000	984.000	159.000	998.000	159.000	998.000	202.000
GR	984.000	202.000	984.000	320.000	984.000	636.000	983.000	1169.000	983.000	1289.000
GR	987.000	1397.000	978.600	1600.000	978.000	1635.000	978.000	1896.000	979.000	2138.000
GR	977.000	2170.000	977.000	2360.000	977.000	2565.000	978.000	2581.000	977.800	2640.000
GR	977.000	2926.000	975.000	3282.000	970.000	3444.000	970.000	3461.000	959.000	3580.000
GR	959.000	3620.000	959.000	3645.000	959.000	3659.000	959.000	3712.000	953.000	3730.000
GR	952.500	3731.000	952.500	3750.000	956.000	3768.000	959.000	3820.000	965.000	3925.000
GR	965.000	3998.000	965.000	4013.000	965.000	4030.000	965.000	4140.000	973.000	4195.000
GR	981.000	4292.000	984.000	4449.000	984.000	4461.000	983.000	4641.000	983.000	4653.000
GR	986.000	4783.000	986.000	4799.000	987.000	4877.000	987.000	4890.000	990.000	4999.000
GR	992.000	5133.000	992.000	5145.000	992.000	5220.000	992.000	5399.000	0.000	0.000
NH	6.000		1450.000	.055	2732.000	.035	3040.000	.055	3160.000	.050
NH	3700.000	0.000	4630.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	0.000	8.100	0.000	0.000	0.000	2606.230	3061.730	0.000

X1	885.000	45.000	2732.000	3040.000	1077.000	1077.000	1077.000	0.000	0.000	0.000
GR	984.000	0.000	984.000	60.000	984.000	116.000	984.000	192.000	984.000	295.000
GR	983.000	413.000	982.000	520.000	982.000	726.000	979.000	1029.000	979.000	1259.000
GR	977.000	1375.000	977.000	1450.000	977.000	1580.000	977.000	1760.000	978.000	1793.000
GR	978.000	2056.000	979.000	2195.000	972.000	2240.000	972.000	2420.000	972.000	2470.000
GR	972.000	2547.000	961.000	2612.000	960.000	2732.000	959.000	2797.000	954.000	2819.000
GR	957.500	2820.000	952.500	2834.000	954.000	2837.000	957.000	2855.000	957.000	2878.000
GR	957.000	2880.000	957.000	2985.000	960.000	3040.000	965.000	3095.000	970.000	3120.000
GR	970.000	3140.000	975.000	3380.000	976.000	3460.000	976.000	3480.000	980.000	3575.000
GR	982.000	3700.000	985.000	3880.000	988.000	4160.000	991.000	4440.000	992.000	4650.000
NC	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
NH	4.000	.050	1934.000	.055	2320.000	.035	2549.000	.050	5090.000	0.000
ET	0.000	0.000	0.000	8.100	0.000	0.000	0.000	1954.710	2540.960	0.000

X1	886.000	50.000	1934.000	2549.000	1331.000	1331.000	1331.000	0.000	0.000	0.000
GR	987.000	0.000	987.000	40.000	987.000	67.000	986.000	211.000	985.000	386.000
GR	984.000	482.000	983.000	586.000	982.000	667.000	981.000	715.000	981.000	860.000
GR	981.000	942.000	976.000	1195.000	974.000	1437.000	974.000	1500.000	974.000	1700.000
GR	974.000	1811.000	963.000	1934.000	962.000	2060.000	962.000	2200.000	962.000	2320.000
GR	962.000	2400.000	962.000	2476.000	958.000	2505.000	955.500	2510.000	945.500	2518.000
GR	958.000	2523.000	965.000	2549.000	968.000	2618.000	968.000	2850.000	968.000	3000.000
GR	968.000	3190.000	969.000	3279.000	973.000	3340.000	977.000	3514.000	977.000	3560.000
GR	977.000	3625.000	980.000	3674.000	984.000	3833.000	984.000	3864.000	984.000	3894.000
GR	984.000	3910.000	984.000	3965.000	985.000	3984.000	986.000	4134.000	986.000	4200.000
GR	986.000	4400.000	986.000	4456.000	988.000	4696.000	989.000	4929.000	990.000	5094.000
NC	0.000	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000

NH	5.000	.050	1060.000	.055	1112.000	.035	1544.000	.055	1620.000	.050
NH	4094.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	2.400	0.000	0.000	0.000	0.000	0.000	0.000

X1	887.100	52.000	1312.000	1544.000	2063.990	2063.990	2063.990	0.000	0.000	0.000
CR	988.000	0.000	988.000	29.000	988.000	93.000	987.000	108.000	987.000	177.000
CR	986.000	265.000	986.000	335.000	986.000	456.000	1002.000	456.000	1002.000	487.000
CR	986.000	487.000	986.000	562.000	986.000	725.000	982.000	909.000	982.000	923.000
CR	977.000	989.000	974.000	1025.000	974.000	1060.000	974.000	1061.000	973.000	1105.000
CR	970.000	1173.000	964.000	1312.000	964.000	1460.000	962.000	1489.000	973.000	1496.000
CR	958.500	1513.000	962.000	1520.000	964.000	1544.000	973.800	1620.000	979.000	1660.000
CR	981.000	1788.000	981.000	1850.000	981.000	2000.000	981.000	2116.000	998.000	2117.000
CR	998.000	2181.000	983.000	2181.000	983.000	2206.000	986.000	2391.000	990.000	2391.000
CR	990.000	2419.000	986.000	2419.000	985.000	2657.000	984.000	2705.000	984.000	2850.000
CR	984.000	2902.000	990.000	3125.000	993.000	3330.000	994.000	3597.000	994.000	3854.000
CR	996.000	3950.000	996.000	4094.000	0.000	0.000	0.000	0.000	0.000	0.000
CR	0.000	0.000	0.000	.300	.500	0.000	0.000	0.000	0.000	0.000
NC	5.000	.050	1800.000	.055	1512.000	.035	1544.000	.055	1870.000	.050
NH	9074.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	0.000	0.000	0.000	6.400	0.000	0.000	0.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

X1	887.200	49.000	1512.000	1539.600	53.000	53.000	53.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
CR	988.000	0.000	988.000	27.000	988.000	48.000	987.000	118.000	987.000	191.000
CR	987.000	279.000	986.000	485.000	986.000	557.000	986.000	696.000	995.000	696.000
CR	988.000	712.000	985.000	712.000	983.000	828.000	999.000	828.000	999.000	853.000
CR	982.000	853.000	977.000	1079.000	972.000	1146.000	972.000	1200.000	965.000	1305.000
CR	964.500	1400.000	984.000	1492.000	966.900	1512.000	958.700	1548.000	959.000	1519.000
CR	959.500	1525.000	959.900	1539.500	966.700	1539.600	962.000	1548.000	969.000	1629.000
CR	976.000	1780.000	976.000	1820.000	976.000	1870.000	976.000	2000.000	976.000	2053.000
CR	991.000	2053.000	991.000	2071.000	978.000	2071.000	984.000	2176.000	984.000	2205.000
CR	987.000	2847.000	986.000	2818.000	984.000	2705.000	984.000	2850.000	987.000	2943.000
CR	993.000	3224.000	994.000	3514.000	996.000	3795.000	994.000	4074.000	0.000	0.000
NH	5.000	.050	1440.000	.055	1578.000	.035	1610.000	.055	1760.000	.050
NH	4004.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NH	0.000	1.500	3.000	0.000	27.600	.100	207.900	0.000	959.400	0.000

X1	887.000	42.000	1578.000	1605.600	27.460	27.460	27.460	0.000	0.000	0.000
X2	0.000	0.000	1.000	966.900	970.300	0.000	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AT	26.000	0.000	988.000	0.000	120.000	988.000	0.000	280.000	987.000	0.000
AT	450.000	987.000	0.000	550.000	986.000	0.000	700.000	983.000	0.000	880.000
AT	982.000	0.000	1210.000	975.000	0.000	1230.000	975.000	1605.600	1270.000	970.500
AT	1577.000	970.300	970.300	1869.000	1578.000	973.300	966.900	1605.600	973.300	966.700
AT	1406.000	0.000	0.000	972.000	970.300	0.000	1870.000	988.000	0.000	1900.000
AT	988.000	2625.000	1901.000	972.000	0.000	2060.000	982.000	0.000	2513.000	987.000
AT	0.000	994.000	984.000	0.000	484.000	0.000	0.000	3140.000	983.000	0.000
AT	3420.000	0.000	0.000	3720.000	0.000	0.000	4004.000	0.000	0.000	0.000
CR	988.000	0.000	988.000	23.000	988.000	49.000	988.000	121.000	987.000	280.000
CR	987.000	342.000	987.000	450.000	986.000	548.000	983.000	699.000	982.000	880.000
CR	978.000	1063.000	975.000	1216.000	975.000	1228.000	966.000	1314.000	964.500	1440.000

GR	963.000	1540.000	1578.000	958.700	1578.100	959.000	1585.000	959.300	1591.400
GR	959.900	1605.500	1605.600	962.000	1610.000	965.000	1642.000	967.000	1757.000
GR	967.100	1760.000	1817.000	968.000	1834.000	968.000	1874.000	988.000	1874.000
GR	988.000	1904.000	1904.000	982.000	2062.000	985.000	2316.000	987.000	2516.000
GR	984.000	2630.000	2780.000	986.000	2864.000	993.000	3137.000	994.000	3434.000
GR	994.000	3723.000	4004.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.100	.300	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	.055	1526.000	.035	1700.000	.055	1850.000	.050
NH	3665.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	8.400	0.000	0.000	0.000	0.000	0.000	0.000

Y1	887.500	43.000	1700.000	53.000	53.000	53.000	0.000	0.000	0.000
GR	988.000	0.000	23.000	988.000	46.000	988.000	100.000	988.000	300.000
GR	988.000	364.000	449.000	987.000	538.000	983.000	681.000	981.000	885.000
GR	979.000	1085.000	1084.000	999.000	1151.000	979.000	1151.000	976.000	1223.000
GR	976.000	1239.000	1291.000	966.000	1352.000	964.000	1460.000	964.000	1526.000
GR	964.000	1619.000	1637.000	958.500	1644.000	958.500	1660.000	962.000	1667.000
GR	965.000	1700.000	1751.000	968.000	1811.000	968.000	1826.000	969.000	1850.000
GR	977.000	1965.000	2150.000	985.000	2356.000	986.000	2519.000	984.000	2640.000
GR	984.000	2730.000	2902.000	994.000	3143.000	996.000	3314.000	994.000	3396.000
GR	994.000	3579.000	3761.000	998.000	3965.000	0.000	0.000	0.000	0.000
OT	9.000	3580.000	2190.000	1750.000	976.000	0.000	0.000	0.000	0.000
NH	5.000	.050	.055	1470.000	.035	1784.000	.055	1820.000	.050
NH	3634.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	8.100	0.000	0.000	0.000	1486.150	1809.670	0.000

Y1	888.000	35.000	1820.000	1637.000	1637.000	1637.000	0.000	0.000	0.000
GR	991.000	0.000	1.000	991.000	50.000	991.000	51.000	989.000	139.000
GR	986.000	371.000	470.000	984.000	660.000	984.000	800.000	984.000	891.000
GR	975.000	974.000	1155.000	976.000	1230.000	976.000	1277.000	975.500	1340.000
GR	975.000	1396.000	1470.000	964.000	1560.000	961.000	1566.000	961.000	1581.000
GR	964.000	1587.000	1617.000	967.000	1784.000	972.000	1820.000	978.000	1858.000
GR	983.000	2058.000	2247.000	983.000	2280.000	983.000	2340.000	983.000	2364.000
GR	988.000	2664.000	2914.000	993.000	3144.000	996.000	3415.000	996.000	3634.000
NC	0.000	0.000	.600	0.000	0.000	0.000	0.000	0.000	0.000
NH	8.000	.055	.035	1164.000	.055	1691.000	.050	3254.000	0.000
ET	0.000	0.000	8.100	0.000	0.000	0.000	664.010	1263.770	0.000

Y1	889.000	31.000	1691.000	2418.040	2418.040	2418.040	0.000	0.000	0.000
GR	992.000	0.000	5.000	991.000	30.000	991.000	40.000	983.000	215.000
GR	980.000	426.000	529.000	971.000	697.000	971.000	877.000	969.000	898.000
GR	967.000	902.000	916.000	969.000	920.000	972.000	949.000	971.000	975.000
GR	971.000	1070.000	1100.000	971.000	1164.000	973.000	1418.000	975.000	1691.000
GR	977.000	1786.000	1855.000	983.000	1940.000	983.000	2055.000	987.000	2152.000
GR	992.000	2398.000	2650.000	992.000	2800.000	992.000	3000.000	992.000	3200.000
GR	992.000	3456.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	.600	0.000	0.000	0.000	0.000	0.000	0.000
NH	5.000	.050	.055	5138.000	.035	5420.000	.055	5500.000	.050
NH	7187.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ET	0.000	0.000	5.400	0.000	0.000	0.000	0.000	0.000	0.000



X1	890.100	5138.000	1932.000	1932.000	1932.000	0.000	0.000
GR	996.000	994.000	460.000	460.000	754.000	992.000	997.000
GR	997.000	992.000	1572.000	1572.000	1665.000	991.000	1900.000
GR	991.000	990.000	2472.000	2472.000	2647.000	989.000	2800.000
GR	989.000	989.000	3400.000	3400.000	3600.000	989.000	3720.000
GR	990.000	990.000	4301.000	4301.000	4505.000	990.000	4611.000
GR	985.000	984.000	4750.000	4750.000	4810.000	983.000	4820.000
GR	983.000	981.000	4860.000	4860.000	4970.000	981.000	5029.000
GR	979.000	975.000	5138.000	5138.000	5246.000	968.500	5259.000
GR	968.500	973.000	5281.000	5281.000	5407.000	989.700	5500.000
GR	994.000	1014.000	5524.000	5524.000	5594.000	995.000	5700.000
GR	995.000	995.000	6007.000	6007.000	6237.000	996.000	6458.000
GR	998.000	998.000	6877.000	6877.000	6982.000	999.000	6793.000
NH	3.000	5178.000	.050	7150.000	0.000	0.000	0.000
FT	0.000	0.000	6.100	0.000	5181.130	5246.460	0.000

X1	890.200	9178.000	5251.000	53.000	53.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	980.500	0.000
GR	992.000	994.000	267.000	614.000	992.000	992.000	1050.000
GR	991.000	989.000	1339.000	1504.000	1620.000	991.000	1900.000
GR	990.000	989.000	2187.000	2426.000	2670.000	990.000	2922.000
GR	990.000	989.000	3145.000	3450.000	3775.000	990.000	3908.000
GR	992.000	987.000	4637.000	4755.000	4830.000	983.000	4847.000
GR	983.000	982.000	4870.000	4950.000	5012.000	980.000	5112.000
GR	979.600	976.600	5178.100	5201.200	5201.300	979.900	5202.700
GR	969.700	969.200	5205.000	5206.000	5218.000	969.100	5221.000
GR	969.700	970.500	5227.200	5227.300	5228.700	970.500	5228.800
GR	977.000	980.500	5251.000	5358.000	5463.000	991.000	5550.000
GR	993.000	995.000	5789.000	5968.000	6199.000	996.000	6821.000
GR	997.000	998.000	6801.000	6840.000	6944.000	999.000	7150.000
NH	3.000	5089.000	.050	7085.000	0.000	0.000	0.000
SR	1.150	3.000	0.000	2.400	561.900	968.400	968.400
FT	0.000	0.000	0.100	0.000	5089.800	5159.830	0.000

X1	890.200	5089.000	5162.000	35.900	35.900	0.000	0.000
X2	0.000	1.000	980.500	0.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	981.300	0.000
RT	32.000	998.000	0.000	994.000	0.000	800.000	0.000
RT	980.000	997.000	1530.000	0.000	1660.000	991.000	2030.000
RT	991.000	2330.000	989.000	0.000	991.000	0.000	990.000
RT	0.000	989.000	0.000	989.000	0.000	991.000	0.000
RT	4830.000	991.000	4750.000	0.000	4880.000	982.000	5088.000
RT	981.300	0.000	983.100	0.000	984.000	980.500	982.200
RT	0.000	5380.000	985.000	5162.000	0.000	5460.000	0.000
RT	5525.000	993.000	5720.000	986.000	0.000	995.000	6130.000
RT	996.000	0.000	996.000	0.000	997.000	0.000	998.000
RT	0.000	6880.000	0.000	999.000	0.000	0.000	0.000
GR	998.000	996.000	284.000	500.000	797.000	992.000	980.000
GR	992.000	981.000	1025.000	992.000	992.000	1072.000	1305.000
GR	992.000	992.000	1532.000	991.000	1900.000	991.000	2025.000

GR	989.000	2334.000	990.000	2571.000	991.000	2827.000	1069.000	990.000	989.000	3125.000
GR	989.000	3400.000	989.000	3750.000	990.000	3093.000	4014.000	991.000	991.000	4161.000
GR	991.000	4253.000	991.000	4352.000	991.000	4431.000	4618.000	988.000	982.000	4755.000
GR	982.000	4820.000	982.000	4847.000	981.000	4958.000	4989.000	979.600	979.600	5089.100
GR	969.700	5112.200	979.900	5112.300	979.900	5113.700	5113.800	969.700	969.000	5117.000
GR	968.900	5121.000	968.800	5129.000	969.000	5131.000	5135.000	970.500	970.500	5138.200
GR	980.200	5138.300	980.200	5139.700	970.500	5139.800	5161.900	980.500	980.500	5162.000
GR	978.000	5324.000	986.000	5383.000	986.000	5398.000	5465.000	993.000	993.000	5530.000
GR	995.000	5725.000	995.000	5903.000	996.000	6134.000	6356.000	997.000	997.000	6690.000
GR	998.000	6736.000	998.000	6779.000	998.000	6880.000	7085.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.100	0.000	0.000	0.000	0.000	0.000	0.000
NH	3.000	.050	4987.000	.035	5286.000	.050	7097.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	4997.630	0.000	5256.900	0.000

X1	890.300	53.000	4987.000	5286.000	53.000	53.000	0.000	53.000	0.000	0.000
GR	998.000	0.000	998.000	324.000	994.000	593.000	867.000	998.000	998.000	868.000
GR	992.000	922.000	994.000	923.000	993.000	1089.000	1277.000	992.000	992.000	1278.000
GR	989.000	1323.000	992.000	1324.000	993.000	1667.000	2001.000	989.000	989.000	2255.000
GR	989.000	2599.000	990.000	2786.000	991.000	2993.000	3190.000	989.000	989.000	3400.000
GR	989.000	3636.000	990.000	3910.000	991.000	4173.000	4350.000	992.000	992.000	4486.000
GR	990.000	4526.000	986.000	4652.000	983.000	4752.000	4800.000	983.000	983.000	4860.000
GR	983.000	4911.000	978.000	4987.000	973.000	5050.000	5070.000	969.000	969.000	5074.008
GR	969.000	5084.000	971.000	5088.000	973.000	5113.000	5217.000	978.000	978.000	5286.000
GR	986.000	5385.000	986.000	5361.000	991.000	5428.000	5492.000	995.000	995.000	5693.000
GR	995.000	5865.000	996.000	6097.000	996.000	6318.000	6653.000	998.000	998.000	6698.000
GR	998.000	6737.000	998.000	6842.000	999.000	7047.000	0.000	0.000	0.000	0.000
NH	3.000	.050	2382.000	.035	2580.000	.050	5552.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	4.400	0.000	0.000	0.000	0.000	0.000	0.000

X1	891.100	51.000	2382.000	2580.000	2196.000	2196.000	0.000	0.000	0.000	0.000
GR	1003.000	0.000	995.000	437.000	991.000	730.000	850.000	991.000	991.000	1050.000
GR	991.000	1271.000	990.000	1577.000	988.000	1715.000	2000.000	988.000	988.000	2159.000
GR	986.000	2260.000	981.000	2359.000	976.000	2382.000	2384.000	973.100	973.100	2396.000
GR	974.000	2398.000	976.000	2421.000	976.000	2580.000	2798.000	979.000	979.000	2900.000
GR	979.000	3045.000	980.000	3114.000	982.000	3209.000	3320.000	982.000	982.000	3570.000
GR	983.000	3595.000	986.000	3663.000	989.000	3737.000	3753.000	989.000	989.000	3780.000
GR	989.000	3855.000	992.000	3956.000	992.000	3974.000	4188.000	994.000	994.000	4216.000
GR	994.000	4258.000	1017.000	4258.000	1017.000	4306.000	4306.000	994.000	994.000	4377.000
GR	1018.000	4377.000	1018.000	4423.000	994.000	4423.000	4592.000	995.000	995.000	4710.000
GR	996.000	4879.000	996.000	4940.000	996.000	5050.000	5105.000	997.000	997.000	5315.000
GR	998.000	5552.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NC	0.000	0.000	0.000	.600	0.000	0.000	0.000	0.000	0.000	0.000
NH	3.000	.050	2398.000	.020	2386.000	.050	5538.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	6.100	0.000	0.000	2358.000	0.000	2590.000	0.000

X1	861.200	60.000	2358.000	2386.000	53.000	53.000	0.000	53.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	981.000	0.000	979.300	0.000
GR	1002.000	0.000	994.000	344.000	993.000	655.000	755.000	991.000	991.000	1000.000
GR	991.000	1178.000	991.000	1438.000	989.000	1605.000	1800.000	989.000	989.000	2005.000
GR	1004.000	2006.000	1004.000	2036.000	989.000	2037.000	2104.000	989.000	989.000	2152.000
GR	987.000	2167.000	981.000	2339.000	982.100	2558.000	2358.100	973.700	973.300	2367.000

GR	973.100	2371.500	973.600	2378.000	981.700	2386.000	977.000	2392.000
GR	979.000	2567.000	980.000	2774.000	980.000	2881.000	980.000	3063.000
GR	982.000	3155.000	982.000	3200.000	982.000	3400.000	984.000	3608.000
GR	984.000	3624.000	986.000	3651.000	989.000	3735.000	989.000	3811.000
GR	1011.000	3811.000	1011.000	3881.000	991.000	3841.000	1003.000	3967.000
GR	1003.000	3984.000	993.000	3985.000	994.000	4189.000	994.000	4268.000
GR	994.000	4371.000	1018.000	4371.000	1018.000	4422.000	994.000	4593.000
GR	997.000	4741.000	997.000	4850.000	997.000	5100.000	997.000	5538.000
NH	3.000	.050	3880.000	.020	3908.000	.050	0.000	0.000
SA	0.000	1.500	3.000	0.000	26.000	.100	973.700	973.700
FT	0.000	0.000	0.000	8.100	0.000	0.000	4100.000	0.000

X1	891.400	62.000	3080.000	3908.000	23.230	23.230	0.000	0.000
X2	0.000	0.000	1.000	982.100	982.000	0.000	0.000	0.000
X3	10.000	0.000	0.000	0.000	0.000	0.000	984.700	0.000
AT	37.000	0.000	1017.000	0.000	39.000	1017.000	880.000	0.000
AT	1230.000	1003.000	0.000	1231.000	1023.000	0.000	1023.000	1261.000
AT	1003.000	0.000	1400.000	1002.000	0.000	1590.000	1850.000	1000.000
AT	0.000	2380.000	994.000	0.000	2960.000	992.000	984.000	0.000
AT	3160.000	989.000	0.000	3300.000	988.000	0.000	987.000	3879.000
AT	984.700	0.000	3880.000	987.500	982.100	3908.000	981.700	984.300
AT	0.000	4200.000	982.000	0.000	5124.000	982.000	5125.000	0.000
AT	5194.000	1000.000	0.000	5196.000	983.000	0.000	990.000	5570.000
AT	993.000	0.000	5740.000	994.000	0.000	5789.000	570.000	1006.000
AT	0.000	5840.000	1006.000	0.000	5841.000	994.000	994.000	0.000
AT	6330.000	996.000	0.000	6660.000	996.000	0.000	6160.000	0.000
AT	997.000	0.000	0.000	0.000	0.000	0.000	997.000	7079.000
CR	1017.000	0.000	1017.000	33.000	1014.000	0.000	0.000	0.000
CR	1005.000	1080.000	1003.000	1230.000	1023.000	1230.000	1008.000	882.000
CR	1002.000	1406.000	1002.000	1549.000	1002.000	1588.000	1000.000	1259.000
CR	988.000	2375.000	993.000	2652.000	992.000	2957.000	989.000	2107.000
CR	973.400	3284.000	987.000	3681.000	985.000	3848.000	973.700	3135.000
CR	976.000	3926.000	976.000	4033.000	982.000	4198.000	981.700	3880.100
CR	1000.000	4320.000	1000.000	4550.000	982.000	4850.000	982.000	4292.000
CR	993.000	5121.000	994.000	5187.000	983.000	5187.000	990.000	5121.000
CR	1006.000	5567.000	994.000	5744.000	994.000	5765.000	994.000	5301.000
CR	996.000	5834.000	994.000	5835.000	994.000	5900.000	1006.000	5784.000
CR	997.000	6331.000	996.000	6400.000	996.000	6560.000	994.000	6151.000
NH	5.000	6950.000	997.000	7079.000	0.000	0.000	994.000	6885.000
NH	7084.000	0.000	3080.000	.060	3280.000	0.000	0.000	0.000
FT	0.000	0.000	0.000	8.100	0.000	0.000	4073.000	.050

X1	891.500	55.000	3820.000	4235.000	53.000	53.000	0.000	0.000
X5	1.000	0.000	982.100	0.000	0.000	0.000	0.000	0.000
CR	1010.000	0.000	1017.000	28.000	1016.000	43.000	1014.000	546.000
CR	1001.000	805.000	1006.000	1065.000	1004.000	1263.000	1001.000	1685.000
CR	989.000	1773.000	990.000	2088.000	994.000	2334.000	990.000	2948.000
CR	1010.000	3078.000	989.000	3080.000	989.000	3099.000	1018.000	3161.000
CR	987.000	3195.000	990.000	3195.000	989.100	3280.000	989.000	3460.000
CR	0.000	3650.000	987.000	3669.000	985.000	3803.000	973.100	3856.000





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 HEC2 RELEASE DATED NOV 76 UPDATED APR1 1980  
 ERROR CORR - 01,02,03,04  
 MODIFICATION - 50,51,52,53,54  
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NOTE- ASTERISK (\*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

ROCKY FORK F18 RUN 5

SUMMARY PRINTOUT

SFCNO	CWBEL	TOPMID	OLOR	QCM	OROR	HV	DIFWSP	DIFMSX	STCML	STCHR	SSTA	ENDST
A50.000	769.30	761.33	32.65	2255.01	1262.33	.06	0.00	0.00	2320.00	2401.00	2307.97	3069.30
A50.000	791.80	1025.79	66.91	3141.28	3191.81	.06	2.50	0.00	2320.00	2401.00	2309.14	3330.13
A50.000	793.00	1279.40	85.95	3479.75	4034.30	.06	1.20	0.00	2320.00	2401.00	2302.60	3582.00
A50.000	796.80	1805.72	141.05	3937.93	9021.02	.04	3.80	0.00	2320.00	2401.00	2297.09	4152.70
* A51.000	789.87	782.67	.41	2729.30	820.29	.67	0.00	.57	3230.00	3300.00	3229.41	4010.97
A51.000	792.05	831.18	6.31	2676.02	3117.67	.20	2.18	.25	3230.00	3300.00	3224.41	4055.79
A51.000	793.24	852.94	12.17	2750.21	5237.62	.14	1.19	.20	3230.00	3300.00	3222.24	4075.18
A51.000	796.93	920.99	46.38	3194.76	9858.86	.08	3.69	.13	3230.00	3300.00	3214.50	4135.49
A52.100	793.35	77.64	0.00	3550.00	0.00	.78	0.00	3.48	2996.00	3096.00	3004.40	3082.04
A52.100	794.18	82.04	0.00	6400.00	0.00	1.98	.83	2.13	2996.00	3096.00	3002.49	3084.53
A52.100	794.65	88.56	0.00	8000.00	0.00	2.71	.88	1.42	2996.00	3096.00	3001.40	3085.96
* A52.100	798.66	605.23	329.70	12521.86	248.44	2.41	4.01	1.74	2996.00	3096.00	2594.24	3681.99
A52.200	793.41	89.58	0.00	3550.00	0.00	.93	0.00	.06	3000.00	3100.50	3001.02	3093.76
A52.200	794.33	93.12	0.00	6400.00	0.00	2.15	.93	.15	3000.00	3100.50	3000.08	3096.33
A52.200	794.87	94.65	0.00	8000.00	0.00	2.82	.53	.21	3000.00	3100.50	3000.07	3097.82
A52.200	802.44	1773.25	3360.95	4249.21	5489.84	.07	7.58	3.78	3000.00	3100.50	2316.90	4110.15
A52.400	793.55	90.42	0.00	3550.00	0.00	.88	0.00	.14	2910.00	3010.50	2910.58	3004.15
A52.400	794.92	94.79	0.00	6400.00	0.00	1.78	1.37	.59	2910.00	3010.50	2910.07	3007.95
A52.400	795.72	97.06	0.00	8000.00	0.00	2.18	.80	.85	2910.00	3010.50	2910.05	3010.17
* A52.400	802.54	1566.54	3351.50	2812.02	6936.47	.03	6.82	.09	2910.00	3010.50	2264.46	3907.00
A52.500	793.55	167.05	19.96	3530.03	0.00	1.50	0.00	-.00	2899.00	2990.00	2788.71	2982.52
A52.500	797.64	1019.75	935.78	2640.02	2820.17	.10	4.10	2.73	2899.00	2990.00	2487.87	3613.82
A52.500	798.13	1141.03	1397.00	2705.08	3897.92	.07	1.49	3.41	2899.00	2990.00	2451.84	3671.88
A52.500	802.54	1497.78	2906.14	3257.13	6936.73	.04	3.41	.00	2899.00	2990.00	2276.35	3808.02
* A53.000	799.33	295.46	297.62	3223.84	28.55	.88	0.00	5.78	2193.00	2279.00	2042.22	2337.68
A53.000	799.50	304.17	590.10	5742.20	47.70	1.44	.17	1.86	2193.00	2279.00	2040.83	2345.00
A53.000	799.80	320.10	859.34	7013.96	126.70	1.92	.30	.67	2193.00	2279.00	2038.30	2358.40
A53.000	802.07	743.65	2663.78	8483.99	1952.23	1.03	3.06	.32	2193.00	2279.00	2019.96	2826.61

Rocky Fork  
 Frequency Summary Printout

SECNO	CMSL	TOPWD	QLOB	QCH	UROR	HV	DIFMSP	DIFMSX	STCHL	STCHR	SSTA	ENDST
A54.100	800.75	120.31	0.00	3550.00	0.00	.65	0.00	1.42	542.00	679.00	551.77	672.08
A54.100	802.86	375.00	188.01	6203.14	8.83	.85	2.11	3.36	542.00	679.00	330.80	705.80
A54.100	803.96	573.59	778.00	7112.77	109.15	.74	1.10	4.16	542.00	679.00	182.38	785.85
A54.100	804.79	750.58	2017.52	10698.38	384.09	1.23	.83	1.93	542.00	679.00	52.96	833.40
A54.200	800.84	79.48	0.00	3550.00	0.00	1.45	0.00	.09	602.00	692.00	607.59	687.07
A54.200	802.81	79.57	0.00	6400.00	0.00	2.31	1.97	.06	602.00	692.00	607.52	687.09
A54.200	804.02	594.03	1719.92	6280.08	0.00	1.26	1.22	.06	602.00	692.00	96.75	691.95
A54.200	805.20	823.32	4704.48	8357.89	37.62	1.38	1.18	.81	602.00	692.00	39.15	862.47
A54.400	800.84	79.48	0.00	3550.00	0.00	1.45	0.00	0.00	675.00	765.00	680.59	760.07
A54.400	804.76	764.81	2323.51	4076.49	0.00	.36	3.92	1.95	675.00	765.00	0.00	765.00
A54.400	805.06	765.00	3216.97	4783.03	0.00	.44	.31	1.04	675.00	765.00	0.00	765.00
A54.400	806.59	1125.61	6627.06	5620.20	852.74	.35	1.52	1.39	675.00	765.00	0.00	1125.61
A54.500	802.90	291.00	164.16	3385.84	0.00	.21	0.00	2.06	675.00	793.00	499.38	790.38
A54.500	805.03	990.18	1408.82	4889.74	101.44	.22	2.14	.28	675.00	793.00	0.00	1060.91
A54.500	805.39	1010.30	2000.39	5785.13	214.52	.27	.36	.33	675.00	793.00	0.00	1088.98
A54.500	806.65	1081.62	4332.69	7860.40	906.91	.34	1.26	.06	675.00	793.00	0.00	1160.13
A55.000	808.28	786.57	226.20	2629.66	693.94	.67	0.00	5.34	1076.00	1172.00	889.67	1676.24
A55.000	808.92	819.14	719.49	3698.02	1982.48	.77	.69	3.89	1076.00	1172.00	877.04	1697.04
A55.000	809.19	831.51	1009.17	4273.64	2717.19	.86	.26	3.80	1076.00	1172.00	873.97	1704.98
A55.000	809.90	863.09	2009.85	5881.16	5208.99	1.09	.71	3.25	1076.00	1172.00	861.45	1726.55
A56.000	816.43	155.42	162.52	3309.65	77.83	1.29	0.00	8.19	1230.00	1292.00	1163.27	1318.69
A56.000	818.05	217.97	687.93	5385.40	326.67	1.88	1.63	9.13	1230.00	1292.00	1118.61	1336.58
A56.000	818.78	249.00	1152.14	6338.85	509.01	2.09	.72	9.59	1230.00	1292.00	1099.55	1344.54
A56.000	820.93	530.68	2858.71	8279.47	1961.82	1.79	2.15	11.03	1230.00	1292.00	1082.90	1573.58
A57.000	824.14	71.41	0.00	3550.00	0.00	1.07	0.00	7.71	371.00	460.00	378.41	449.82
A57.000	826.75	83.64	0.00	6400.00	0.00	1.60	2.62	6.70	371.00	460.00	373.08	456.71
A57.000	827.70	87.74	0.00	8000.00	0.00	1.96	.93	8.93	371.00	460.00	371.49	459.23
A57.000	830.43	633.75	6.02	11320.69	1773.29	1.90	2.73	9.50	371.00	460.00	367.85	1001.59
A58.000	837.43	774.99	.04	3214.89	333.03	.63	0.00	13.29	569.00	730.00	564.42	1343.41
A58.000	838.04	801.46	.91	4807.07	1592.07	.82	.60	11.28	569.00	730.00	567.62	1369.08
A58.000	838.61	826.59	2.47	5172.42	2825.11	.64	.57	10.91	569.00	730.00	566.85	1343.45
A58.000	839.62	847.39	8.48	6960.34	6131.18	.67	1.01	9.19	569.00	730.00	565.50	1412.89
A59.000	850.32	99.92	0.00	3550.00	0.00	1.37	0.00	12.89	545.00	726.00	552.89	652.41
A59.000	852.26	133.65	0.00	6400.00	0.00	1.73	1.94	14.23	545.00	726.00	549.38	683.03
A59.000	852.57	138.94	0.00	8000.00	0.00	2.37	.31	13.96	545.00	726.00	548.89	687.83
A59.000	854.47	171.77	0.00	13100.00	0.00	3.00	1.90	14.85	545.00	726.00	545.85	717.62
A60.000	870.11	304.82	6.78	2706.82	6.40	1.28	0.00	19.79	708.00	788.00	594.45	899.27
A60.000	871.61	969.77	402.15	3295.57	1162.24	.67	1.50	19.35	708.00	788.00	586.75	1556.52
A60.000	871.90	971.95	593.69	3666.74	1859.55	.68	.29	19.33	708.00	788.00	589.28	1557.23
A60.000	872.45	976.14	1030.97	4939.89	4039.13	.88	.55	17.98	708.00	788.00	582.46	1558.60

SECNO	CMSXL	TOPWID	QLOS	OCH	QROR	HV	DIFNSP	DIFNSX	STCHL	BTCRR	BSTA	ENDST
A61.000	A61.16	A1.32	0.00	2720.00	0.00	1.29	0.00	11.05	482.00	574.00	488.09	525.42
A61.000	A62.48	98.69	0.00	4900.00	0.00	2.14	1.32	10.87	482.00	574.00	483.38	542.07
A61.000	A63.26	108.95	0.00	6120.00	0.00	2.35	.78	11.36	482.00	574.00	482.95	551.90
A61.000	A65.22	133.26	.00	10030.00	.00	2.88	1.96	12.77	482.00	574.00	441.32	574.57
A62.000	A68.03	A9.36	0.00	2720.00	0.00	1.55	0.00	16.87	705.00	909.00	715.94	804.41
A62.000	A69.91	120.33	0.00	4900.00	0.00	1.69	1.84	17.43	705.00	909.00	712.33	832.66
A62.000	900.60	131.67	0.00	6120.00	0.00	1.88	.69	17.35	705.00	909.00	711.14	843.00
A62.000	902.27	159.07	0.00	10030.00	0.00	2.49	1.67	17.05	705.00	909.00	708.94	868.01
A63.100	909.29	99.20	0.00	2720.00	0.00	.86	0.00	11.27	600.00	775.00	665.26	764.46
A63.100	910.88	131.66	0.00	4900.00	0.00	1.24	1.59	10.97	600.00	775.00	637.12	768.97
A63.100	911.66	147.52	0.00	6120.00	0.00	1.35	.77	11.06	600.00	775.00	623.66	771.18
A63.100	913.51	183.69	1.72	10028.10	.18	1.69	1.85	11.24	600.00	775.00	592.14	775.83
A63.200	909.63	A1.24	0.00	2720.00	0.00	.81	0.00	.34	671.00	761.00	671.07	752.31
A63.200	911.16	A3.84	0.00	4900.00	0.00	1.48	1.53	.27	671.00	761.00	671.06	759.89
A63.200	911.90	A5.10	0.00	6120.00	0.00	1.82	.74	.24	671.00	761.00	671.05	756.15
A63.200	913.60	88.00	0.00	10030.00	0.00	3.08	1.71	.09	671.00	761.00	671.04	759.04
A63.400	909.63	A1.23	0.00	2720.00	0.00	.81	0.00	0.00	1146.00	1236.00	1146.07	1227.30
A63.400	911.16	A3.83	0.00	4900.00	0.00	1.48	1.53	0.00	1146.00	1236.00	1146.06	1229.89
A63.400	911.90	A5.10	0.00	6120.00	0.00	1.82	.74	0.00	1146.00	1236.00	1146.05	1231.15
A63.400	913.60	88.00	0.00	10030.00	0.00	3.08	1.71	0.00	1146.00	1236.00	1146.04	1234.04
A63.500	909.83	75.44	0.00	2720.00	0.00	1.14	0.00	.20	1080.00	1282.00	1118.64	1194.08
A63.500	911.42	A7.05	0.00	4900.00	0.00	1.88	1.59	.26	1080.00	1282.00	1113.61	1200.66
A63.500	912.19	92.77	0.00	6120.00	0.00	2.19	.77	.29	1080.00	1282.00	1111.13	1203.90
A63.500	914.04	106.25	0.00	10030.00	0.00	3.20	1.83	.43	1080.00	1282.00	1105.29	1211.58
A64.000	915.89	195.67	2.28	2707.62	10.10	.51	0.00	6.07	1451.00	1621.00	1446.28	1641.90
A64.000	917.51	242.13	29.20	4741.29	129.51	.61	1.62	6.09	1451.00	1621.00	1437.61	1679.74
A64.000	918.28	268.24	55.83	5816.40	247.75	.65	.77	6.08	1451.00	1621.00	1433.51	1697.75
A64.000	920.50	329.44	188.51	8960.77	880.72	.72	2.22	6.46	1451.00	1621.00	1421.63	1751.07
A65.000	919.46	178.98	0.00	2720.00	0.00	.30	0.00	3.54	1917.00	2120.00	1937.03	2116.01
A65.000	920.76	199.23	0.00	4900.00	0.00	.50	1.30	3.25	1917.00	2120.00	1920.15	2119.37
A65.000	921.34	233.09	2.15	6117.85	.00	.60	.58	3.06	1917.00	2120.00	1887.46	2120.55
A65.000	922.93	374.19	221.16	9805.15	3.69	.86	1.59	2.43	1917.00	2120.00	1788.93	2123.12
A66.000	922.94	73.63	0.00	2720.00	0.00	1.09	0.00	3.88	2108.00	2352.00	2114.47	2188.10
A66.000	925.54	387.97	0.00	4660.35	239.65	.82	2.60	4.78	2108.00	2352.00	2108.97	2577.74
A66.000	926.15	516.59	.00	5503.92	616.08	.72	.62	4.81	2108.00	2352.00	2107.57	2624.16
A66.000	927.35	588.78	3.50	8125.22	1901.28	.76	1.20	4.42	2108.00	2352.00	2104.22	2693.00
A67.000	927.79	258.67	448.68	2256.48	18.92	.32	0.00	4.86	2583.00	2695.00	2454.61	2713.28
A67.000	929.60	285.38	1237.77	3559.00	103.23	.36	1.80	4.06	2583.00	2695.00	2446.21	2731.59
A67.000	930.12	293.16	1648.29	4319.55	156.16	.44	.52	3.97	2583.00	2695.00	2483.76	2736.92
A67.000	931.33	511.04	2973.21	6696.82	359.97	.73	1.21	3.98	2583.00	2695.00	2438.13	2789.18

SECMN	CWSEL	TOPWID	QLOB	QCH	GRUB	HV	DIFWSP	DIFMSX	STCHL	STCHR	SSTA	ENDST
A68.000	930.10	275.15	606.72	2100.3A	12.90	.48	0.00	2.30	1843.00	1910.00	1644.32	1919.47
A68.000	931.52	290.8A	1681.51	3166.80	51.69	.54	1.42	1.92	1843.00	1910.00	1634.98	1925.86
A68.000	932.1A	298.21	2129.64	3704.53	81.83	.59	.66	2.06	1843.00	1910.00	1630.63	1928.84
A68.000	933.89	317.09	4478.43	5340.51	207.06	.76	1.71	2.56	1843.00	1910.00	1619.43	1936.51
A69.000	932.98	516.80	0.00	2720.00	0.00	.08	0.00	2.88	1613.00	2133.00	1616.16	2132.94
A69.000	934.3A	582.31	15.15	4876.28	8.56	.10	1.40	2.86	1613.00	2133.00	1573.20	2155.51
A69.000	935.03	611.80	41.80	6054.58	23.62	.11	.65	2.85	1613.00	2133.00	1554.17	2166.17
A69.000	936.79	691.37	211.92	9698.31	119.77	.14	1.76	2.90	1613.00	2133.00	1503.54	2194.92
A70.000	933.77	334.47	188.42	2520.68	10.90	.11	0.00	.79	1659.00	1856.00	1542.21	1876.68
A70.000	935.17	368.95	552.03	4289.75	58.22	.18	1.40	.80	1659.00	1856.00	1533.52	1902.47
A70.000	935.82	414.84	778.30	5230.73	110.97	.22	.64	.79	1659.00	1856.00	1529.58	1944.42
A70.000	937.53	515.97	1548.49	8008.25	473.26	.31	1.71	.74	1659.00	1856.00	1518.93	2034.90
A71.100	934.28	99.39	0.00	2720.00	0.00	.51	0.00	.51	3672.00	3990.00	3852.02	3951.41
A71.100	935.76	144.15	0.00	4900.00	0.00	.91	1.47	.58	3672.00	3990.00	3814.64	3958.79
A71.100	936.45	178.21	0.00	6120.00	0.00	1.02	.69	.64	3672.00	3990.00	3784.05	3962.27
A71.100	938.23	265.28	0.00	10030.00	0.00	1.19	1.78	.70	3672.00	3990.00	3705.87	3971.15
A71.200	934.34	81.52	0.00	2720.00	0.00	.56	0.00	.06	3842.00	3929.00	3842.07	3928.98
A71.200	935.73	81.78	0.00	4900.00	0.00	1.16	1.39	.02	3842.00	3929.00	3842.05	3928.96
A71.200	936.27	81.88	0.00	6120.00	0.00	1.55	.53	.18	3842.00	3929.00	3842.00	3928.96
A71.200	936.83	81.99	0.00	10030.00	0.00	3.61	.57	-1.39	3842.00	3929.00	3842.03	3928.97
A71.400	934.51	81.55	0.00	2720.00	0.00	.53	0.00	.16	3779.00	3866.00	3779.07	3865.94
A71.400	936.21	81.87	0.00	4900.00	0.00	1.01	1.71	.48	3779.00	3866.00	3779.04	3865.96
A71.400	937.03	82.02	0.00	6120.00	0.00	1.28	.81	.76	3779.00	3866.00	3779.03	3865.97
A71.400	938.71	82.34	0.00	10030.00	0.00	2.37	1.68	1.87	3779.00	3866.00	3779.01	3865.99
A71.500	934.92	168.93	0.00	2720.00	0.00	.19	0.00	.42	3741.00	3959.00	3762.32	3925.25
A71.500	937.08	184.00	0.00	4900.00	0.00	.29	2.15	.86	3741.00	3959.00	3753.25	3937.25
A71.500	938.15	194.39	0.00	6120.00	0.00	.32	1.07	1.12	3741.00	3959.00	3748.77	3943.16
A71.500	940.93	322.09	72.75	9957.25	0.00	.41	2.78	2.23	3741.00	3959.00	3636.54	3958.63
A72.100	935.10	103.78	0.00	2720.00	0.00	.41	0.00	.17	3474.00	3749.00	3613.62	3717.36
A72.100	937.18	125.02	0.00	4900.00	0.00	.64	2.09	.11	3474.00	3749.00	3601.92	3726.93
A72.100	938.25	153.48	0.00	6120.00	0.00	.70	1.07	.10	3474.00	3749.00	3578.39	3731.84
A72.100	941.05	227.83	0.00	10030.00	0.00	.75	2.80	.12	3474.00	3749.00	3516.83	3744.66
A72.200	934.92	74.92	0.00	2720.00	0.00	.77	0.00	.18	3606.00	3706.00	3616.48	3693.49
A72.200	936.82	80.28	0.00	4900.00	0.00	1.29	1.90	.37	3606.00	3706.00	3611.39	3698.12
A72.200	937.80	92.36	0.00	6120.00	0.00	1.50	.98	.46	3606.00	3706.00	3608.73	3703.53
A72.200	940.29	100.00	0.00	10030.00	0.00	2.12	2.50	.76	3606.00	3706.00	3606.00	3706.00
A72.400	935.00	70.94	0.00	2720.00	0.00	.74	0.00	.08	3309.00	3409.00	3319.26	3396.68
A72.400	936.98	86.00	0.00	4900.00	0.00	1.22	1.98	.16	3309.00	3409.00	3313.05	3401.49
A72.400	937.98	92.48	0.00	6120.00	0.00	1.41	1.00	.19	3309.00	3409.00	3311.66	3406.57
A72.400	942.27	100.00	0.00	10030.00	0.00	1.40	4.29	1.98	3309.00	3409.00	3309.00	3409.00

SECNO	CMSFL	TOPMID	QLOH	UCH	OROB	HV	DIFWSP	DIFWGX	STCHL	STCHR	SSTA	ENDST
A72.500	939.33	300.92	77.81	2606.29	35.90	.52	0.00	.33	3254.00	3359.00	3221.01	3521.94
A72.500	938.14	566.39	300.70	3288.15	1311.15	.22	2.81	1.16	3254.00	3359.00	3212.60	3778.99
A72.500	939.40	620.45	392.92	3506.55	2220.53	.16	1.26	1.42	3254.00	3359.00	3208.80	3829.25
A72.500	941.75	916.62	708.09	3984.58	5337.33	.07	4.35	1.48	3254.00	3359.00	3020.82	3937.44
A73.000	937.16	385.01	.69	1762.25	7.06	.04	0.00	1.83	3727.00	4075.00	3723.66	4108.80
A73.000	938.95	442.36	6.66	3104.13	79.21	.05	1.74	.81	3727.00	4075.00	3719.07	4161.42
A73.000	939.97	475.60	13.19	3820.34	156.47	.05	1.03	.57	3727.00	4075.00	3716.29	4191.89
A73.000	941.95	618.18	53.59	5807.78	678.63	.04	3.98	.20	3727.00	4075.00	3705.55	4323.73
A74.000	938.68	109.40	0.00	1770.00	0.00	.47	0.00	1.52	4368.00	4586.00	4374.62	4484.02
A74.000	939.86	148.43	0.00	3190.00	0.00	.71	1.18	.92	4368.00	4586.00	4371.24	4515.67
A74.000	940.63	166.96	0.00	3990.00	0.00	.71	.76	.65	4368.00	4586.00	4369.07	4536.03
A74.000	944.20	618.96	387.88	4956.36	1196.20	.20	3.58	.26	4368.00	4586.00	4193.67	4812.63
A75.100	940.97	308.79	38.32	1669.17	62.50	.28	0.00	2.29	3969.00	4084.00	3926.34	4235.13
A75.100	942.48	422.31	168.18	2417.18	604.64	.25	1.51	2.62	3969.00	4084.00	3893.84	4316.15
A75.100	943.13	469.63	260.00	2786.26	983.74	.25	.64	2.50	3969.00	4084.00	3879.86	4349.49
A75.100	945.00	607.11	627.63	3509.99	2402.37	.22	1.87	.80	3969.00	4084.00	3839.26	4446.37
A75.200	940.87	49.37	0.00	1770.00	0.00	.48	0.00	.10	3959.30	4008.70	3959.32	4008.69
A75.200	942.08	235.78	0.00	3038.69	151.31	.96	1.20	.41	3959.30	4008.70	3959.30	4195.32
A75.200	943.02	490.19	669.78	2799.47	520.78	.50	.95	.10	3959.30	4008.70	3874.61	4324.80
A75.200	944.99	613.76	1141.75	3117.82	2280.43	.31	1.97	.01	3959.30	4008.70	3845.16	4458.93
A75.400	940.87	49.37	0.00	1770.00	0.00	.48	0.00	0.00	3921.30	3970.70	3921.32	3970.69
A75.400	943.20	425.42	0.00	2488.84	741.14	.39	2.32	1.12	3921.30	3970.70	3921.30	4346.72
A75.400	944.30	666.51	502.25	2119.86	1367.89	.17	1.10	1.28	3921.30	3970.70	3761.58	4428.09
A75.400	945.67	812.78	1005.11	2596.05	2938.84	.16	1.37	.68	3921.30	3970.70	3716.79	4529.57
A75.500	941.13	227.45	237.82	1507.79	24.39	.34	0.00	.25	3912.00	3976.00	3873.28	4050.73
A75.500	943.53	580.33	623.03	1722.34	844.63	.13	2.80	.33	3912.00	3976.00	3755.18	4335.51
A75.500	944.39	614.84	811.62	1843.28	1335.10	.11	.87	.10	3912.00	3976.00	3730.54	4365.39
A75.500	945.74	718.49	1401.13	2486.51	2652.36	.13	1.34	.07	3912.00	3976.00	3692.74	4411.22
A76.000	944.20	307.30	73.81	1678.76	17.42	.11	0.00	3.07	3627.00	3817.00	3555.79	3863.09
A76.000	945.25	378.04	231.93	2860.03	98.83	.18	1.05	1.73	3627.00	3817.00	3525.05	3903.09
A76.000	945.83	411.96	367.13	3845.90	176.97	.19	.57	1.43	3627.00	3817.00	3513.36	3925.33
A76.000	947.19	495.20	805.49	5046.99	687.52	.23	1.36	1.45	3627.00	3817.00	3485.93	4081.13
A77.000	946.39	397.82	0.00	1741.46	28.54	.17	0.00	2.19	2627.00	2956.00	2666.08	3063.90
A77.000	947.37	503.24	2.28	2963.25	224.47	.18	.99	2.12	2627.00	2956.00	2596.30	3094.53
A77.000	947.80	552.68	16.00	3627.20	346.80	.20	.42	1.97	2627.00	2956.00	2561.98	3114.66
A77.000	948.93	685.90	157.88	5597.73	784.39	.24	1.13	1.74	2627.00	2956.00	2449.36	3155.28
A78.000	950.00	1224.67	340.39	842.89	36.72	.01	0.00	3.61	2431.00	2769.00	1659.00	2883.67
A78.000	950.70	1721.80	135.50	1284.26	90.24	.01	.70	3.33	2431.00	2769.00	1202.00	2923.80
A78.000	950.90	1753.27	1106.62	1533.34	120.04	.02	.20	3.10	2431.00	2769.00	1182.00	2955.27
A78.000	951.20	1798.61	1984.21	2354.58	221.22	.03	.30	2.27	2431.00	2769.00	1151.43	2950.04



66/10

86/10

80/10

90/10

T

A

WE

V



SEFNO	CMSEL	TOPWID	OLON	QCH	UROR	HV	DIFMSP	DIFWSX	STCHL	STCHR	SSTA	EMDST
* A79.000	953.30	1707.18	539.82	328.67	351.91	.00	0.00	3.30	4999.00	5092.00	3853.90	5561.28
* A79.000	954.21	2570.81	1037.55	517.03	655.42	.00	.91	3.51	4999.00	5092.00	3019.59	5586.40
* A79.000	954.62	2590.73	1341.86	603.58	814.56	.00	.41	3.72	4999.00	5092.00	3006.98	5597.71
* A79.000	954.75	2597.05	2222.70	967.60	1330.20	.01	.13	3.55	4999.00	5092.00	3008.25	5601.30
* A80.100	955.01	997.68	76.47	684.46	457.07	.00	0.00	1.71	5003.00	5263.00	4734.98	5732.63
* A80.100	955.40	1099.55	200.04	1153.16	856.80	.00	.89	1.69	5003.00	5263.00	4640.20	5743.75
* A80.100	956.28	1148.47	279.03	1400.28	1080.62	.01	.38	1.66	5003.00	5263.00	4605.88	5753.91
* A80.100	957.32	1035.02	625.60	2113.28	1781.12	.01	1.04	2.97	5003.00	5263.00	2762.00	5787.02
* A80.200	955.06	883.88	26.74	309.58	883.88	.00	0.00	.05	5001.00	5078.00	4853.85	5737.73
* A80.200	955.87	978.99	82.93	498.69	1628.38	.01	.81	-.03	5001.00	5078.00	4808.65	5783.63
* A80.200	957.88	3110.04	280.75	492.88	1986.37	.00	1.61	1.20	5001.00	5078.00	2718.10	5828.13
* A80.200	957.74	3123.01	599.59	762.34	3158.06	.01	.26	.42	5001.00	5078.00	2711.65	5834.66
* A80.400	955.88	791.81	0.00	776.83	443.57	.02	0.00	.42	5014.00	5091.00	5014.00	5805.81
* A80.400	956.23	996.88	166.60	1031.64	1011.76	.02	.75	.36	5014.00	5091.00	4829.04	5825.88
* A80.400	957.76	1182.68	327.98	863.48	1568.58	.01	1.53	.28	5014.00	5091.00	4682.92	5865.60
* A80.400	958.05	3707.73	576.23	1328.19	2615.59	.02	.29	.31	5014.00	5091.00	2688.85	7067.95
* A80.500	955.27	988.74	67.86	832.41	320.13	.00	0.00	-.21	4995.00	5279.00	4875.30	5824.03
* A80.500	957.65	1107.69	167.52	1246.14	796.34	.00	2.38	1.42	4995.00	5279.00	4776.37	5884.06
* A80.500	957.83	1127.08	215.27	1537.59	1007.15	.00	.18	.07	4995.00	5279.00	4761.52	5888.60
* A80.500	958.15	1575.82	370.02	2464.74	1685.24	.01	.32	.10	4995.00	5279.00	4735.12	6988.08
* A81.000	956.79	1810.47	108.08	935.18	176.75	.00	0.00	1.52	2324.00	2852.00	1514.06	3324.52
* A81.000	957.72	1960.90	383.27	1479.59	387.15	.00	.93	.09	2324.00	2852.00	1471.74	3832.64
* A81.000	957.92	1994.90	462.11	1799.09	498.80	.00	.20	.09	2324.00	2852.00	1462.64	3857.54
* A81.000	958.30	2815.88	888.80	2798.08	877.16	.01	.38	.15	2324.00	2852.00	1483.63	4380.22
* A82.000	956.79	1938.65	76.30	599.76	543.94	.00	0.00	0.00	2795.00	3131.00	2230.73	4169.38
* A82.000	957.72	2072.18	307.96	786.59	1115.45	.00	.93	0.00	2795.00	3131.00	2114.12	4186.30
* A82.000	957.92	2101.62	421.11	926.38	1412.51	.00	.20	0.00	2795.00	3131.00	2088.32	4189.94
* A82.000	958.30	2157.56	790.98	1370.20	2358.82	.01	.38	0.00	2795.00	3131.00	2039.30	4196.86
* A83.000	957.10	206.70	0.00	1220.00	0.00	.21	0.00	1.51	2875.00	2970.00	2753.09	3001.37
* A83.000	958.14	332.52	.03	2209.73	.24	.20	1.04	1.60	2875.00	2970.00	2746.77	3023.67
* A83.000	958.57	377.12	1.35	2788.55	10.10	.21	.43	1.67	2875.00	2970.00	2748.02	3033.35
* A83.000	959.36	459.06	15.82	4385.49	118.69	.29	.79	2.08	2875.00	2970.00	2737.34	3056.86
* A84.100	958.61	208.28	165.61	1038.85	15.54	.09	0.00	-.27	2875.00	2906.00	2868.00	2905.99
* A84.100	959.74	276.90	488.19	1691.10	70.71	.14	1.14	-.89	2875.00	2906.00	2868.01	2905.99
* A84.100	960.20	289.33	615.85	2030.28	113.87	.16	.49	-.06	2875.00	2906.00	2748.26	3014.80
* A84.100	961.44	319.52	1167.99	3061.00	291.01	.24	1.20	-.03	2875.00	2906.00	2734.83	3041.00
* A84.200	958.33	36.54	0.00	1220.00	0.00	.55	0.00	-.27	2868.00	2906.00	2868.00	2905.99
* A84.200	958.85	36.57	0.00	2710.00	0.00	1.52	.52	-.89	2868.00	2906.00	2868.01	2905.99
* A84.200	960.17	266.54	538.00	1607.77	614.23	.35	1.32	-.06	2868.00	2906.00	2748.26	3014.80
* A84.200	961.42	301.95	1196.20	2097.89	1225.95	.39	1.24	-.03	2868.00	2906.00	2734.83	3041.00

W

X F

Y F

Z

A

SECNO	CWSEL	TOPWID	ALOH	OCH	URQB	HV	DIFWSP	DIFWSX	STCHL	STCHR	SSYA	ENOST
AA4.000	958.38	36.54	0.00	1220.00	0.00	.54	0.00	.05	3069.00	3107.00	3069.02	3106.99
AA4.400	958.88	36.57	0.00	2210.00	0.00	1.49	.50	.03	3069.00	3107.00	3069.01	3106.99
AA4.400	961.22	300.20	748.31	1706.98	304.71	.31	2.34	1.04	3069.00	3107.00	2882.20	3186.39
AA4.400	962.53	308.56	1713.73	2130.00	676.28	.31	1.32	1.12	3069.00	3107.00	2865.23	3209.79
AA4.500	958.86	151.83	0.00	1220.00	0.00	.18	0.00	.08	3659.00	3820.00	3665.91	3817.74
AA4.500	960.48	280.52	142.32	2054.31	13.37	.16	1.57	1.55	3659.00	3820.00	3564.52	3845.04
AA4.500	961.47	300.93	300.06	2412.79	46.75	.13	1.03	.25	3659.00	3820.00	3553.29	3863.21
AA4.500	962.73	305.66	670.86	3698.81	150.33	.19	1.26	.20	3659.00	3820.00	3539.84	3885.24
AA5.000	959.81	282.29	0.00	1220.00	0.00	.04	0.00	.94	2732.00	3040.00	2748.25	3036.54
AA5.000	961.15	801.58	29.67	2177.79	2.54	.06	1.14	.71	2732.00	3040.00	2611.10	3052.68
AA5.000	961.98	452.61	102.07	2648.54	9.39	.05	.84	.51	2732.00	3040.00	2606.20	3061.80
AA5.000	963.52	478.05	310.31	4171.81	37.88	.08	1.14	.59	2732.00	3040.00	2598.35	3076.40
AA6.000	960.90	49.81	0.00	1220.00	0.00	1.35	0.00	1.09	1934.00	2549.00	2083.97	2533.78
AA6.000	962.44	538.78	0.00	2210.00	0.00	.84	1.54	1.29	1934.00	2549.00	2004.71	2539.49
AA6.000	962.89	592.87	0.00	2760.00	0.00	.27	.45	.91	1934.00	2549.00	1948.28	2541.15
AA6.000	964.12	624.20	7.10	4512.90	0.00	.16	1.23	.80	1934.00	2549.00	1921.52	2545.72
AA7.100	965.75	286.07	21.53	1191.29	7.17	.06	0.00	4.85	1312.00	1544.00	1271.49	1557.56
AA7.100	966.71	315.78	72.78	2112.97	24.24	.10	.96	4.27	1312.00	1544.00	1249.23	1565.01
AA7.100	966.97	323.75	102.50	2623.39	34.15	.13	.26	4.09	1312.00	1544.00	1243.26	1567.01
AA7.100	967.64	344.36	217.10	4230.58	72.32	.24	.66	3.52	1312.00	1544.00	1227.82	1572.18
AA7.200	965.84	27.56	0.00	1220.00	0.00	.81	0.00	-0.31	1512.00	1539.60	1512.02	1539.58
AA7.200	965.58	27.57	0.00	2210.00	0.00	2.54	.14	-1.13	1512.00	1539.60	1512.02	1539.58
AA7.200	966.07	27.58	0.00	2760.00	0.00	3.82	.49	-0.90	1512.00	1539.60	1512.01	1539.59
AA7.200	968.01	357.11	2313.99	1552.52	653.50	.31	1.93	.37	1512.00	1539.60	1259.86	1616.97
AA7.800	965.84	27.56	0.00	1220.00	0.00	.81	0.00	0.00	1578.00	1605.60	1578.02	1605.58
AA7.800	965.93	27.58	0.00	2210.00	0.00	2.28	.49	.35	1578.00	1605.60	1578.01	1605.59
AA7.800	968.21	27.60	0.00	2760.00	0.00	1.97	2.28	2.13	1578.00	1605.60	1578.00	1605.60
AA7.800	971.38	611.43	2414.01	702.66	1403.33	.03	3.17	3.37	1578.00	1605.60	1262.57	1874.00
AA7.500	966.34	376.14	.16	1213.69	6.19	.03	0.00	.90	1352.00	1700.00	1346.73	1722.87
AA7.500	968.88	517.51	20.29	2127.98	61.73	.03	2.10	2.51	1352.00	1700.00	1314.94	1832.45
AA7.500	970.37	574.18	67.39	2488.55	204.06	.02	1.93	2.16	1352.00	1700.00	1287.79	1861.97
AA7.500	971.39	588.79	154.68	3938.58	426.78	.03	1.02	.00	1352.00	1700.00	1278.98	1877.77
AA8.000	967.33	263.89	0.00	970.00	0.00	.08	0.00	.99	1470.00	1820.00	1522.51	1786.40
AA8.000	968.86	292.24	0.00	1750.00	0.00	.07	1.53	.42	1470.00	1820.00	1505.22	1797.86
AA8.000	970.54	323.10	0.00	2190.00	0.00	.08	1.68	.17	1470.00	1820.00	1486.40	1809.50
AA8.000	971.64	343.35	0.00	3580.00	0.00	.07	1.10	.25	1470.00	1820.00	1478.05	1817.81
AA9.000	971.04	532.84	0.00	970.00	0.00	.11	0.00	4.16	529.00	1691.00	676.25	1226.74
AA9.000	971.63	562.70	0.00	1750.00	0.00	.25	.14	2.77	529.00	1691.00	670.04	1245.51
AA9.000	971.81	597.04	0.00	2190.00	0.00	.26	.18	1.27	529.00	1691.00	663.00	1266.82
AA9.000	973.02	608.34	0.00	3580.00	0.00	.10	1.21	1.30	529.00	1691.00	612.21	1420.55

Handwritten notes and signatures at the bottom of the page, including 'NO' and 'C. J. ...'.



SECNO	CWSEL	TOPID	QLOH	QCH	QROB	HV	DIFWSP	DIFWEX	STCHL	BTCR	BSTA	ENDST
R90.100	974.65	261.00	0.00	970.00	0.00	.07	0.00	3.16	5138.00	5420.00	5156.74	5417.74
R90.100	975.51	291.27	.61	1749.12	.27	.10	.86	3.88	5138.00	5420.00	5131.54	5422.81
R90.100	975.79	296.11	1.98	2187.17	.65	.13	.28	3.98	5138.00	5420.00	5128.17	5428.28
R90.100	976.36	306.57	10.19	3565.42	4.40	.23	.58	3.35	5138.00	5420.00	5120.88	5427.45
R90.200	974.65	55.25	0.00	970.00	0.00	.35	0.00	.00	5178.00	5251.00	5184.63	5242.90
R90.200	975.45	60.67	0.00	1750.00	0.00	.75	.80	-.06	5178.00	5251.00	5181.96	5245.62
R90.200	975.68	62.28	0.00	2190.00	0.00	1.05	.24	-.10	5178.00	5251.00	5181.17	5246.42
R90.200	976.15	65.45	0.00	3580.00	0.00	2.27	.47	-.21	5178.00	5251.00	5179.60	5248.01
R90.400	974.71	55.64	0.00	970.00	0.00	.34	0.00	.06	5089.00	5162.00	5095.44	5158.10
R90.400	975.62	61.84	0.00	1750.00	0.00	.69	.91	.17	5089.00	5162.00	5092.18	5157.20
R90.400	974.98	64.28	0.00	2190.00	0.00	.92	.36	.30	5089.00	5162.00	5091.18	5158.43
R90.400	977.23	69.91	0.00	3580.00	0.00	1.46	1.25	1.08	5089.00	5162.00	5089.08	5161.91
R90.500	974.98	156.91	0.00	970.00	0.00	.18	0.00	.28	4987.00	5286.00	5024.97	5181.88
R90.500	976.29	218.65	0.00	1750.00	0.00	.14	1.31	.68	4987.00	5286.00	5008.49	5227.15
R90.500	976.91	247.44	0.00	2190.00	0.00	.15	.61	.93	4987.00	5286.00	5000.79	5248.23
R90.500	978.75	315.94	1.75	3577.41	.84	.13	1.85	1.52	4987.00	5286.00	4975.59	5291.54
R91.100	977.79	335.95	5.93	868.88	95.09	.06	0.00	2.80	2382.00	2580.00	2371.79	2709.74
R91.100	978.67	404.11	16.38	1470.86	262.76	.08	.88	2.17	2382.00	2580.00	2369.73	2773.84
R91.100	979.08	483.20	23.51	1779.08	387.40	.09	.41	2.17	2382.00	2580.00	2367.80	3051.00
R91.100	980.18	760.17	46.20	2468.59	1065.20	.09	1.10	1.43	2382.00	2580.00	2362.74	3122.91
R91.200	977.65	27.89	0.00	970.00	0.00	1.11	0.00	.13	2358.00	2386.00	2358.05	2385.95
R91.200	978.50	27.91	0.00	1750.00	0.00	2.49	.84	-.17	2358.00	2386.00	2358.04	2385.96
R91.200	979.57	124.78	0.00	1620.92	569.08	1.08	1.08	.49	2358.00	2386.00	2358.03	2685.56
R91.200	980.58	730.07	0.00	1915.49	1664.51	.82	1.00	.39	2358.00	2386.00	2358.02	3089.54
R91.400	977.65	27.89	0.00	970.00	0.00	1.11	0.00	0.00	3880.00	3908.00	3880.05	3907.95
R91.400	979.02	27.93	0.00	1750.00	0.00	2.03	1.37	.52	3880.00	3908.00	3880.04	3907.96
R91.400	982.04	1241.00	0.00	779.29	1410.71	.07	1.02	2.47	3880.00	3908.00	3880.00	5121.00
R91.400	982.49	1241.00	0.00	1159.70	2420.30	.13	.45	1.91	3880.00	3908.00	3880.00	5121.00
R91.500	978.40	213.78	0.00	970.00	0.00	.06	0.00	1.75	3820.00	4235.00	3830.52	4044.30
R91.500	982.25	1268.75	.02	1716.11	33.87	.02	2.86	3.23	3820.00	4235.00	3818.56	5087.31
R91.500	982.10	1264.05	0.00	2180.38	9.62	.04	-.15	.06	3820.00	4235.00	3819.43	5083.49
R91.500	982.61	1279.58	.32	3328.71	250.97	.07	.51	.12	3820.00	4235.00	3816.55	5096.13
R92.000	984.10	95.82	0.00	970.00	0.00	.95	0.00	4.70	3769.00	3944.00	3780.47	3875.80
R92.000	984.61	110.60	0.00	1750.00	0.00	1.01	.51	2.35	3769.00	3944.00	3777.37	3887.97
R92.000	984.98	121.59	0.00	2190.00	0.00	1.10	.37	2.88	3769.00	3944.00	3775.13	3896.71
R92.000	985.94	149.74	0.00	3580.00	0.00	1.31	.96	3.33	3769.00	3944.00	3769.38	3919.12
R93.000	990.86	308.61	0.00	970.00	0.00	.03	0.00	6.77	3051.00	3621.00	3208.24	3556.84
R93.000	991.77	445.56	0.00	1750.00	0.00	.06	.36	7.17	3051.00	3621.00	3162.69	3608.25
R93.000	992.13	513.55	0.00	2189.66	.33	.06	.36	7.15	3051.00	3621.00	3144.70	3658.24
R93.000	993.00	797.66	0.00	3510.59	69.41	.08	.86	7.06	3051.00	3621.00	3101.37	3899.04

00/10/10. 06.30.50.

FLOOD INSURANCE ZONE DATA FOR ROCKY FORK FIS RUN 5

FLOOD HAZARD FACTOR FOR ENTIRE REACH USING SECTIONS

SECTION NUMBER	CUMULATIVE DISTANCE	ELEVATION DIFFERENCE BETWEEN BASE FLOOD AND	
		2	0.2
850.000	0.	-3.70	-1.20
851.000	1299.	-3.37	-1.19
852.100	2882.	-1.31	-.48
852.200	2535.	-1.46	-.53
852.400	2587.	-2.17	-.80
852.500	2640.	-5.99	-1.49
853.000	3986.	-.47	-.30
854.100	4645.	-3.21	-1.10
854.200	4698.	-3.19	-1.22
854.400	4726.	-4.23	-.31
854.500	4779.	-2.49	-.36
855.000	6086.	-.95	-.26
856.000	7567.	-2.35	-.72
857.000	9262.	-3.97	-.95
858.000	11049.	-1.18	-.57
859.000	12948.	-2.29	-.31
860.000	14675.	-1.79	-.29
861.000	15988.	-2.09	-.78
862.000	17499.	-2.57	-.69
863.100	18750.	-2.37	-.77
863.200	18803.	-2.27	-.74
863.400	18831.	-2.27	-.74
863.500	18884.	-2.36	-.77
864.000	19882.	-2.39	-.77
865.000	20491.	-1.88	-.58
866.000	22242.	-3.22	-.62
867.000	23878.	-2.33	-.52
868.000	24581.	-2.08	-.66
869.000	26656.	-2.05	-.65
870.000	27902.	-2.05	-.64
871.100	28673.	-2.17	-.69
871.200	28726.	-1.93	-.53
871.400	28755.	-2.52	-.81
871.500	28808.	-3.23	-1.07
872.100	29077.	-3.16	-1.07
872.200	29130.	-2.88	-.98
872.400	29174.	-2.98	-1.00
872.500	29227.	-4.08	-1.26
873.000	30557.	-2.81	-1.03
874.000	32658.	-1.95	-.76
875.100	35830.	-2.15	-.64
875.200	35883.	-2.15	-.95
875.400	35901.	-3.42	-1.10
875.500	35954.	-3.27	-.87

Rocky Fork  
FHFS

06/10/10. 06:34.50.

A76.000	36246.	-1.61	-1.57	1.36
A77.000	37793.	-1.41	-1.42	1.13
A78.000	39572.	-1.90	-1.20	.30
A79.000	40454.	-1.32	-1.41	.13
A80.100	41093.	-1.27	-1.34	1.04
A80.200	41146.	-2.42	-1.61	.26
A80.400	41187.	-2.24	-1.53	.29
A80.500	41240.	-2.54	-1.14	.32
A81.000	42222.	-1.13	-1.20	.34
A82.000	43516.	-1.13	-1.20	.34
A83.000	45169.	-1.47	-1.43	.79
A84.100	46431.	-1.43	-1.49	1.20
A84.200	46484.	-1.84	-1.32	1.24
A84.400	46503.	-2.43	-2.34	1.32
A84.500	46554.	-2.61	-1.03	1.26
A85.000	47633.	-2.17	-1.84	1.34
A86.000	48964.	-1.99	-1.49	1.23
A87.100	51024.	-1.23	-1.26	.64
A87.200	51041.	-1.64	-1.49	1.93
A87.400	51104.	-2.77	-2.24	3.17
A87.500	51161.	-4.03	-1.93	1.02
A88.000	52794.	-3.21	-1.64	1.10
A89.000	55214.	-1.32	-1.14	1.21
A90.100	57148.	-1.13	-1.24	.58
A90.200	57201.	-1.03	-1.24	.47
A90.400	57217.	-1.27	-1.36	1.25
A90.500	57290.	-1.92	-1.61	1.85
A91.100	59446.	-1.29	-1.41	1.10
A91.200	59539.	-1.92	-1.04	1.00
A91.400	59563.	-4.34	+3.02	.45
A91.500	59616.	-2.70	.15	.51
A92.000	61970.	-1.44	-1.37	.94
A93.000	64864.	-1.27	-1.36	.86
WEIGHTED AVG FOR REACH				1.54

PMF FOR THE REACH # 020 WITH 89.3 PERCENT OF THE REACH WITHIN 1.0 FEET  
 ZONE FOR THE REACH # A 4

ROCKY FORK  
 \*PROF 1 SYMBOL 0 PEN 1

SEC NO.	ELEVATION	MILE	REACH LENGTH
850.000	775.000	.045	0.000
851.000	781.000	.291	1299.000
852.100	784.000	.515	1183.000
852.200	784.300	.525	53.000
852.400	784.300	.535	51.740
852.500	784.500	.545	53.000
853.000	790.500	.800	1346.000
854.100	793.000	.925	659.470
854.200	793.400	.935	53.000
854.400	793.400	.940	27.460
854.500	793.500	.950	53.000
855.000	801.500	1.190	1267.000
856.000	807.000	1.478	1521.000
857.000	815.000	1.799	1695.000
858.000	828.500	2.145	1827.000
859.000	843.500	2.497	1859.000
860.000	864.000	2.824	1727.000
861.000	874.000	3.072	1309.000
862.000	892.500	3.359	1515.000
863.100	903.500	3.596	1251.390
863.200	903.900	3.606	53.000
863.400	903.900	3.611	27.460
863.500	904.000	3.621	53.000
864.000	910.000	3.810	998.000
865.000	912.500	4.020	1109.000
866.000	917.000	4.297	1251.000
867.000	921.000	4.492	1236.000
868.000	923.000	4.701	1103.520

Rocky Fork  
 Sections Vs.  
 River Miles

869.000	924.500	5.093	2075.000
870.000	925.000	5.329	1246.000
871.100	927.000	5.476	771.000
871.200	927.200	5.486	53.000
871.400	927.200	5.491	28.510
871.500	927.500	5.501	53.000
872.100	928.000	5.552	269.000
872.200	928.200	5.562	53.000
872.400	928.200	5.570	48.350
872.500	928.500	5.580	53.000
873.000	931.000	5.832	1330.000
874.000	932.000	6.230	2101.000
875.100	933.500	6.452	1172.100
875.200	933.900	6.462	53.000
875.400	933.900	6.466	17.950
875.500	934.000	6.476	53.000
876.000	937.000	6.910	2292.000
877.000	941.500	7.203	1547.080
878.000	943.000	7.580	1778.960
879.000	943.500	7.707	881.760
880.100	945.000	7.828	639.000
880.200	945.000	7.838	53.000
880.400	945.000	7.846	41.180
880.500	945.000	7.856	53.000
881.000	947.000	8.042	982.000
882.000	948.000	8.287	1294.000
883.000	951.000	8.600	1653.000
884.100	952.000	8.839	1262.060
884.200	952.300	8.849	93.000
884.400	952.300	8.852	19.010

888.500	952.500	8.862	53.000
885.000	952.500	9.046	1077.000
886.000	955.500	9.310	1331.000
887.100	958.500	9.709	2063.990
887.200	958.700	9.719	53.000
887.400	958.700	9.725	27.460
887.500	958.500	9.735	93.000
888.000	961.000	10.045	1437.000
889.000	967.000	10.503	2418.040
890.100	968.500	10.869	1432.000
890.200	968.600	10.879	53.000
890.400	968.600	10.885	35.900
890.500	969.000	10.895	53.000
891.100	973.100	11.311	2186.000
891.200	973.100	11.321	53.000
891.400	973.100	11.326	23.230
891.500	973.100	11.336	53.000
892.000	980.500	11.782	2354.660
893.000	986.500	12.330	2893.440

APPENDIX C:

Duplicate Effective HEC-RAS Model



HEC-RAS Plan: Dup Eff River: Rocky Fork Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	885	100-year	2760.00	952.50	961.88		961.94	0.000286	1.94	1552.23	444.72	0.16
1	885	FW	2760.00	952.50	961.88		961.94	0.000286	1.94	1552.23	444.72	0.16
1	885	10-year	1220.00	952.50	959.80		959.85	0.000450	1.66	734.26	291.53	0.18
1	885	50-year	2210.00	952.50	961.17		961.23	0.000341	1.89	1240.15	436.20	0.17
1	885	500-year	4520.00	952.50	962.85		962.95	0.000377	2.54	1989.39	456.38	0.19
1	884.50	100-year	2760.00	952.50	961.31		961.46	0.000745	3.23	1013.71	305.51	0.26
1	884.50	FW	2760.00	952.50	961.31		961.46	0.000745	3.23	1013.71	305.51	0.26
1	884.50	10-year	1220.00	952.50	958.84		959.02	0.001498	3.41	358.15	149.87	0.39
1	884.50	50-year	2210.00	952.50	960.49		960.65	0.000942	3.29	771.25	282.14	0.30
1	884.50	500-year	4520.00	952.50	961.98		962.26	0.001235	4.48	1224.32	324.44	0.34
1	884.4	100-year	2760.00	952.30	958.99	958.48	961.16	0.013459	11.87	246.13	69.89	0.84
1	884.4	FW	2760.00	952.30	958.99	958.48	961.16	0.013459	11.87	246.13	69.89	0.84
1	884.4	10-year	1220.00	952.30	958.32		958.87	0.003716	5.95	206.42	47.11	0.44
1	884.4	50-year	2210.00	952.30	959.13	957.54	960.42	0.008002	9.23	269.51	188.13	0.64
1	884.4	500-year	4520.00	952.30	961.18		962.07	0.005682	9.16	803.34	302.86	0.56
1	884.2	100-year	2760.00	952.30	960.15		960.51	0.002847	5.94	739.09	265.89	0.39
1	884.2	FW	2760.00	952.30	960.15		960.51	0.002847	5.94	739.09	265.89	0.39
1	884.2	10-year	1220.00	952.30	958.39		958.75	0.002718	5.11	322.89	200.49	0.38
1	884.2	50-year	2210.00	952.30	959.72		960.05	0.002697	5.55	626.48	253.52	0.38
1	884.2	500-year	4520.00	952.30	961.46		961.85	0.002738	6.52	1111.83	303.26	0.39
1	884.1	100-year	2760.00	952.00	960.22		960.38	0.000754	3.72	1041.99	288.82	0.27
1	884.1	FW	2760.00	952.00	960.22		960.38	0.000754	3.72	1041.99	288.82	0.27
1	884.1	10-year	1220.00	952.00	958.51		958.61	0.000643	2.72	585.11	245.88	0.24
1	884.1	50-year	2210.00	952.00	959.79		959.93	0.000666	3.33	921.57	278.15	0.25
1	884.1	500-year	4520.00	952.00	961.49		961.73	0.000880	4.59	1428.85	320.71	0.31
1	883	100-year	2760.00	951.00	957.57		958.17	0.007231	6.17	447.48	265.31	0.84
1	883	FW	2760.00	951.00	957.57		958.17	0.007231	6.17	447.48	265.31	0.84
1	883	10-year	1220.00	951.00	955.69		956.54	0.008387	7.38	165.21	61.02	0.79
1	883	50-year	2210.00	951.00	957.07	956.94	957.77	0.009369	6.72	329.05	202.72	0.93
1	883	500-year	4520.00	951.00	958.04	958.04	958.97	0.010798	7.73	584.92	322.27	1.00
1	882	100-year	2760.00	948.00	957.60		957.61	0.000069	0.85	5028.93	2054.89	0.07
1	882	FW	2760.00	948.00	957.60		957.61	0.000069	0.85	5028.93	2054.89	0.07
1	882	10-year	1220.00	948.00	955.35		955.37	0.000185	1.04	1432.96	723.50	0.11
1	882	50-year	2210.00	948.00	956.15		956.18	0.000290	1.45	2195.71	1854.83	0.13
1	882	500-year	4520.00	948.00	957.99		958.00	0.000124	1.19	5834.09	2111.78	0.09
1	881	100-year	2760.00	947.00	957.54		957.55	0.000033	0.65	5892.05	1931.03	0.05
1	881	FW	2760.00	947.00	957.54		957.55	0.000033	0.65	5892.05	1931.03	0.05
1	881	10-year	1220.00	947.00	955.24		955.25	0.000052	0.63	2211.72	1105.00	0.06
1	881	50-year	2210.00	947.00	955.98		955.99	0.000084	0.88	3068.81	1220.71	0.08
1	881	500-year	4520.00	947.00	957.87		957.88	0.000069	0.96	6537.86	1987.07	0.07
1	880.5	100-year	2760.00	945.00	957.52		957.53	0.000019	0.67	5808.08	1197.78	0.04
1	880.5	FW	2760.00	945.00	957.52		957.53	0.000019	0.67	5808.08	1197.78	0.04
1	880.5	10-year	1220.00	945.00	955.22		955.22	0.000015	0.48	3465.18	946.29	0.03
1	880.5	50-year	2210.00	945.00	955.94		955.94	0.000030	0.74	4155.92	980.66	0.05
1	880.5	500-year	4520.00	945.00	957.82		957.83	0.000044	1.04	6180.70	1289.96	0.06
1	880.4	100-year	2760.00	945.00	957.51	950.65	957.52	0.000087	1.23	3908.13	1152.37	0.07
1	880.4	FW	2760.00	945.00	957.51	950.65	957.52	0.000087	1.23	3908.13	1152.37	0.07
1	880.4	10-year	1220.00	945.00	955.19	948.64	955.22	0.000176	1.47	1410.14	905.88	0.09
1	880.4	50-year	2210.00	945.00	955.91	949.98	955.94	0.000235	1.80	2215.82	961.21	0.11
1	880.4	500-year	4520.00	945.00	957.80	952.25	957.83	0.000186	1.84	4246.62	1187.59	0.10
1	880.3											
			Bridge									
1	880.2	100-year	2760.00	945.00	957.48		957.48	0.000029	0.71	6478.62	3110.04	0.04
1	880.2	FW	2760.00	945.00	957.48		957.48	0.000029	0.71	6478.62	3110.04	0.04
1	880.2	10-year	1220.00	945.00	955.06		955.06	0.000029	0.58	3071.71	883.88	0.04
1	880.2	50-year	2210.00	945.00	955.87		955.88	0.000052	0.84	3826.17	978.98	0.05
1	880.2	500-year	4520.00	945.00	957.74		957.75	0.000063	1.06	7288.94	3123.01	0.06
1	880.1	100-year	2760.00	945.00	956.28		956.29	0.000024	0.71	5486.36	1148.48	0.04
1	880.1	FW	2760.00	945.00	956.28		956.29	0.000024	0.71	5486.36	1148.48	0.04
1	880.1	10-year	1220.00	945.00	955.01		955.01	0.000010	0.41	4126.23	997.65	0.03
1	880.1	50-year	2210.00	945.00	955.90		955.90	0.000019	0.61	5059.50	1099.55	0.04
1	880.1	500-year	4520.00	945.00	957.32		957.33	0.000041	1.01	7316.24	3035.02	0.06
1	879	100-year	2760.00	943.50	954.62		954.62	0.000021	0.83	8023.83	2581.01	0.05
1	879	FW	2760.00	943.50	954.62		954.62	0.000021	0.83	8023.83	2581.01	0.05
1	879	10-year	1220.00	943.50	953.30		953.30	0.000010	0.52	5223.52	1705.58	0.03
1	879	50-year	2210.00	943.50	954.21		954.21	0.000019	0.77	6969.26	2563.55	0.05

HEC-RAS Plan: Dup Eff River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	879	500-year	4520.00	943.50	954.75		954.76	0.000049	1.30	8359.73	2586.55	0.08
1	878	100-year	2760.00	943.00	950.90		950.92	0.000186	1.30	3505.43	1753.27	0.12
1	878	FW	2760.00	943.00	950.90		950.92	0.000186	1.30	3505.43	1753.27	0.12
1	878	10-year	1220.00	943.00	950.00		950.01	0.000121	0.93	1991.16	1224.67	0.10
1	878	50-year	2210.00	943.00	950.70		950.71	0.000155	1.15	3157.90	1721.80	0.11
1	878	500-year	4520.00	943.00	951.20		951.23	0.000346	1.84	4038.28	1798.61	0.16
1	877	100-year	3990.00	941.50	947.85		948.04	0.001699	3.65	1258.82	558.53	0.37
1	877	FW	3990.00	941.50	947.85		948.04	0.001700	3.65	1258.72	558.50	0.37
1	877	10-year	1770.00	941.50	946.43		946.58	0.002580	3.23	581.05	401.69	0.42
1	877	50-year	3190.00	941.50	947.37		947.55	0.002012	3.55	1006.60	502.59	0.39
1	877	500-year	6540.00	941.50	949.00		949.22	0.001385	4.09	1979.29	694.71	0.35
1	876	100-year	3990.00	937.00	946.22		946.39	0.000726	3.44	1502.44	554.60	0.26
1	876	FW	3990.00	937.00	946.22		946.38	0.000727	3.44	1501.63	554.54	0.26
1	876	10-year	1770.00	937.00	944.08		944.20	0.001019	2.87	680.67	298.46	0.29
1	876	50-year	3190.00	937.00	945.28		945.45	0.000979	3.50	1090.81	380.12	0.30
1	876	500-year	6540.00	937.00	947.38		947.60	0.000821	4.18	2171.94	603.33	0.29
1	875.5	100-year	3990.00	934.00	945.40		945.46	0.000245	2.83	2784.12	697.62	0.17
1	875.5	FW	3990.00	934.00	945.39		945.45	0.000246	2.83	2782.12	697.44	0.17
1	875.5	10-year	1770.00	934.00	942.75		942.83	0.000386	2.81	1158.60	531.59	0.20
1	875.5	50-year	3190.00	934.00	943.66		943.78	0.000555	3.68	1666.99	588.57	0.24
1	875.5	500-year	6540.00	934.00	946.11		946.22	0.000441	3.99	3298.88	770.72	0.23
1	875.4	100-year	3990.00	933.90	945.36	940.30	945.45	0.000341	3.25	2586.70	779.91	0.17
1	875.4	FW	3990.00	933.90	945.36	940.30	945.45	0.000342	3.25	2584.42	779.60	0.17
1	875.4	10-year	1770.00	933.90	942.48	937.83	942.79	0.000958	4.44	398.33	432.85	0.28
1	875.4	50-year	3190.00	933.90	943.38	939.49	943.73	0.001246	5.44	1018.70	568.44	0.32
1	875.4	500-year	6540.00	933.90	946.06	943.58	946.20	0.000592	4.46	3157.71	881.69	0.23
1	875.3		Bridge									
1	875.2	100-year	3990.00	933.90	943.04	940.31	943.55	0.001970	6.66	1028.98	451.31	0.40
1	875.2	FW	3990.00	933.90	943.07	940.31	943.57	0.001919	6.59	1044.26	454.12	0.40
1	875.2	10-year	1770.00	933.90	940.87	937.85	941.35	0.001914	5.56	318.60	101.53	0.39
1	875.2	50-year	3190.00	933.90	942.09	939.49	943.05	0.003340	8.03	497.69	309.36	0.51
1	875.2	500-year	6540.00	933.90	945.01	943.11	945.34	0.001286	6.17	2079.51	615.44	0.33
1	875.1	100-year	3990.00	933.50	943.15		943.41	0.000883	4.83	1408.21	471.39	0.31
1	875.1	FW	3990.00	933.50	943.18		943.43	0.000865	4.79	1422.26	473.56	0.30
1	875.1	10-year	1770.00	933.50	940.98		941.22	0.000957	4.03	557.77	309.41	0.30
1	875.1	50-year	3190.00	933.50	942.50		942.76	0.000905	4.61	1119.70	424.21	0.31
1	875.1	500-year	6540.00	933.50	945.03		945.26	0.000712	5.02	2424.20	609.09	0.29
1	874	100-year	3990.00	932.00	940.62		941.33	0.004813	6.77	589.40	166.82	0.63
1	874	FW	3990.00	932.00	940.92		941.53	0.003900	6.23	640.87	175.72	0.57
1	874	10-year	1770.00	932.00	938.68		939.15	0.004093	5.51	321.42	109.37	0.57
1	874	50-year	3190.00	932.00	939.86		940.57	0.005383	6.78	470.26	144.13	0.66
1	874	500-year	6540.00	932.00	944.21		944.41	0.000719	4.08	2310.55	618.82	0.27
1	873	100-year	3990.00	931.00	939.97	935.72	940.02	0.000190	1.89	2276.77	475.66	0.14
1	873	FW	3990.00	931.00	940.47	935.72	940.51	0.000142	1.72	2518.63	491.81	0.12
1	873	10-year	1770.00	931.00	937.16	934.95	937.20	0.000366	1.68	1067.61	384.96	0.17
1	873	50-year	3190.00	931.00	938.95	935.46	939.00	0.000239	1.86	1808.40	442.74	0.15
1	873	500-year	6540.00	931.00	943.95	936.37	943.99	0.000079	1.72	4439.49	618.37	0.10

HEC-RAS HEC-RAS 6.1.0 September 2021  
U.S. Army Corps of Engineers  
Hydrologic Engineering Center  
609 Second Street  
Davis, California

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X      X  XXXXXX   XXXX       XXXX       XX       XXXX
X      X  X       X   X       X  X       X  X       X
X      X  X       X       X       X  X       X  X       X
XXXXXXXX XXXX     X       XXX  XXXX     XXXXXX     XXXX
X      X  X       X       X       X  X       X  X       X
X      X  X       X   X       X  X       X  X       X
X      X  XXXXXX   XXXX       X   X       X  X       XXXXX
```

PROJECT DATA

Project Title: 20220861  
Project File : 20220861.prj  
Run Date and Time: 2/17/2023 7:52:41 AM

Project in English units

Project Description:

ROCKY FORK TRIB OF BIG WALNUT  
ROCKY FORK SECTIONS 850 THRU 891.5

ROCKY FORK FIS RUN 5

PLAN DATA

Plan Title: Duplicate Effective  
Plan File : j:\20220861\Reports\Floodplain\Modeling\20220861.p01

Geometry Title: Imported DEM  
Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g01

Flow Title : Duplicate Effective Flows  
Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f03

Plan Description:

Import of DEM HEC-2 data into HEC-RAS, adjusted cross section reach lengths up and downstream of E Dublin Granville Rd and Thompson Rd. Corrected a few

station/elevations based on original HEC2 data.

Plan Summary Information:

Number of: Cross Sections	=	22	Multiple Openings	=	0
Culverts	=	0	Inline Structures	=	0
Bridges	=	2	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculation tolerance	=	0.01
Maximum number of iterations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computation Options

Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

FLOW DATA

Flow Title: Duplicate Effective Flows

Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f03

Flow Data (cfs)

River	Reach	RS	100-year	FW
10-year	50-year	500-year		
Rocky Fork	1	885	2760	2760
1220	2210	4520		
Rocky Fork	1	877	3990	3990
1770	3190	6540		

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Rocky Fork	1	100-year	
Known WS = 939.97			

Rocky Fork	1	FW
Known WS =	940.47	
Rocky Fork	1	10-year
Known WS =	937.16	
Rocky Fork	1	50-year
Known WS =	938.95	
Rocky Fork	1	500-year
Known WS =	943.95	

Changes in WS and EG

River	Reach	RS	Profile	Type	Value
Rocky Fork	1	880.2	500-year	Known WS	957.74
Rocky Fork	1	880.2	50-year	Known WS	955.87
Rocky Fork	1	880.2	10-year	Known WS	955.06
Rocky Fork	1	880.2	FW	Known WS	957.48
Rocky Fork	1	880.2	100-year	Known WS	957.48
Rocky Fork	1	880.1	500-year	Known WS	957.32
Rocky Fork	1	880.1	50-year	Known WS	955.9
Rocky Fork	1	880.1	10-year	Known WS	955.01
Rocky Fork	1	880.1	FW	Known WS	956.28
Rocky Fork	1	880.1	100-year	Known WS	956.28
Rocky Fork	1	879	500-year	Known WS	954.75
Rocky Fork	1	879	50-year	Known WS	954.21
Rocky Fork	1	879	10-year	Known WS	953.3
Rocky Fork	1	879	FW	Known WS	954.62
Rocky Fork	1	879	100-year	Known WS	954.62
Rocky Fork	1	878	500-year	Known WS	951.2
Rocky Fork	1	878	50-year	Known WS	950.7
Rocky Fork	1	878	10-year	Known WS	950
Rocky Fork	1	878	FW	Known WS	950.9
Rocky Fork	1	878	100-year	Known WS	950.9

GEOMETRY DATA

Geometry Title: Imported DEM  
 Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g01

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 885

INPUT  
 Description:

Station Elevation Data				num= 45					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	984	60	984	116	984	192	984	295	984
413	983	520	982	726	982	1029	979	1259	979
1375	977	1450	977	1580	977	1760	977	1793	978
2056	978	2195	975	2240	972	2420	972	2470	972
2547	972	2612	961	2732	960	2797	959	2819	954
2822	952.5	2834	952.5	2837	954	2855	957	2878	957
2880	957	2985	957	3040	960	3095	969	3120	970
3160	970.8	3380	975	3460	976	3480	976	3575	980
3700	982	3880	985	4160	988	4440	991	4630	992

Manning's n Values				num= 6					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1450	.055	2732	.035	3040	.055	3160	.05
3700	.055								

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2732	3040		1077	1077		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 884.50

INPUT

Description:

Station Elevation Data				num= 54					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	984	100	984	159	984	159	998	202	998
202	984	320	984	636	984	1169	983	1289	983
1397	982	1600	978.6	1635	978	1896	978	2138	979
2170	977	2360	977	2565	977	2581	978	2640	977.8
2926	977	3282	975	3444	970	3461	970	3580	959
3620	959	3645	959	3659	959	3712	958	3730	953
3731	952.5	3750	952.5	3768	956	3820	959	3925	965
3998	965	4013	965	4030	965	4140	965	4195	973
4292	981	4449	984	4461	984	4641	983	4653	983
4783	986	4799	986	4877	987	4890	987	4999	990
5133	992	5145	992	5220	992	5399	992		

Manning's n Values				num= 5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1600	.055	2640	.05	3712	.035	3820	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	3659	3820		53	53		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 884.4

INPUT

Description: upstream side of Warner Road

Station Elevation Data				num= 54					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	984	180	984	320	984	399	984	466	984
616	984	766	983	943	980	1203	978	1463	979
1586	978	1600	977	1800	977	2020	977	2033	978
2304	977	2556	975	2600	974.1	2742	971	2756	971
2898	960	2908	960	2955	959	3030	959	3060	959
3069	959.4	3069.1	952.7	3081	952.8	3087.2	952.9	3087.3	959.4
3088.7	959.4	3088.8	952.9	3094	952.7	3106.9	952.3	3107	959.4
3129	958	3218	963	3322	967	3360	967	3460	967
3493	968	3570	977	3680	983	3870	986	3984	984
3994	984	4071	985	4227	988	4240	988	4479	992
4493	992	4711	992	4726	992	4747	992		

Manning's n Values				num= 5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1600	.055	2600	.05	3069	.035	3107	.05

Bank Sta:	Left	Right	Lengths:		Left Channel	Right	Coeff	Contr.	Expan.
	3069	3107	19.01	19.01	19.01		.1	.3	

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 884.2

INPUT

Description: Downstream Side of Warner Road

Station Elevation Data				num= 47					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	982	150	982	251	982	315	982	389	982
403	982	504	981	517	981	651	980	734	979
829	978	945	977	1300	977	1620	977	1729	978
1951	976	2168	971	2280	966	2500	966	2505	966
2549	968	2560	968	2570	967	2660	967	2702	967
2763	958	2854	958	2868	959.4	2868.1	952.7	2876	952.8
2886.2	952.9	2886.3	959.4	2887.7	959.4	2887.8	952.9	2898	952.6
2905.9	952.3	2906	959	2924	956	3098	964	3099	986
3143	986	3144	964	3272	969	3336	976	3477	980
4400	991	4959	991						

Manning's n Values				num= 4					
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Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2500	.055	2868	.035	2906	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2868	2906		53	53		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 884.1

INPUT

Description:

Station	Elevation	Data	num=	46					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	983	260	983	394	983	409	983	501	981
515	981	597	980	722	979	839	978	940	977
1200	977	1400	977	1550	977	1727	977	1979	976
2201	970	2305	966	2535	966	2552	968	2562	968
2575	966	2580	966	2680	966	2712	966	2762	957
2875	957	2891	953	2893	952	2911	952	2913	953
2936	955	2970	957	3107	964	3108	986	3150	986
3151	964	3265	967	3338	977	3630	981	3887	985
4149	989	4164	989	4231	991	4392	991	4440	991
4561	991								

Manning's n Values	num=	4					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2580	.055	2875	.035	2970	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	2875	2970		1262.06	1262.06		.1	.3

Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883

INPUT

Description: FEMA CROSS SECTION AE

Station	Elevation	Data	num=	44					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	982	100	982	217	982	427	981	606	980
664	979	743	975	877	974	1100	974	1300	974
1500	974	1700	974	1964	974	2246	970	2551	968
2604	967	2604	997	2664	997	2664	967	2710	967
2820	958	2845	953	2847	951	2869	951	2871	953

2895	956	2960	956.5	3138	958	3321	960	3497	963
3569	970	3703	978	3871	982	4012	985	4100	985
4210	985	4233	986	4442	990	4630	991	4700	991
4900	991	4978	991	4994	991	5046	991		

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2820	.035	2960	.055	3138	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2820 3138 1653 1653 1653 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 882

INPUT

Description: FEMA CROSS SECTION AD

Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	973	20	973	140	973	140	987	198	987
198	973	240	971	500	971	584	971	827	968
970	965	1091	962	1274	961	1380	961	1550	961
1760	961	1835	961	1949	959	2207	957	2320	956
2600	956	2712	956	2795	956	2827	949	2829	948
2844	948	2846	949	2870	952	2900	952.2	3131	954
3260	954	3435	954	3563	956	3700	956	3900	956
4155	956	4246	961	4386	964	4440	964	4495	964
4516	966	4520	966.2	4647	973	4745	973	5141	973
5501	975	5929	976	6231	976				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2795	.035	2900	.055	3131	.05	4520	.055

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2795 3131 1294 1294 1294 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881

INPUT

Description: FEMA CROSS SECTION AC

Station Elevation Data				num= 50					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	966	100	966	221	966	447	963	725	962
800	962	900	962	1005	962	1254	962	1459	958
1550	956	1700	956	1900	956	2031	956	2100	955
2250	955	2324	955	2590	950.6	2629	950	2653	949
2654	947	2675	947	2676	949	2704	951	2761	952
2770	952	2835	952	2840	952.6	2852	954	3079	954
3343	957	3592	959	3640	958	3900	958	4150	958
4375	958	4462	963	4664	970	4852	975	5077	978
5200	978	5344	978	5500	978	5680	976	5704	979
5818	979	5847	979	5892	980	6049	980	6257	980

Manning's n Values				num= 6					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2324	.055	2590	.035	2761	.055	2840	.05
5200	.055								

Bank Sta: Left      Right      Lengths: Left Channel      Right      Coeff Contr.      Expan.  
                     2324      2852                      982      982      982                      .1                      .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1                                      RS: 880.5

INPUT

Description: FEMA CROSS SECTION AB

Station Elevation Data				num= 65					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	979	305	978	500	978	700	978	900	978
1100	978	1400	978	1542	978	1778	974	1778	986
1811	986	1811	974	1961	973	1979	973	2000	972.8
2177	971	2313	967	2501	963	2605	959	2800	959
3000	957	3200	959	3400	959	3600	959	3800	959
4000	959	4200	959	4450	959	4651	959	4665	959
4830	957	4836	957	4995	950	5040	945.5	5042	945
5083	945	5085	945.5	5126	950	5279	952	5531	952
5792	954	6019	963	6202	970	6286	972	6303	972
6365	973	6365	1003	6391	1003	6391	973	6488	970
6543	962	6575	958	6780	958	6985	958	7026	960
7070	960	7150	960	7305	965	7576	972	7783	977
8011	984	8271	988	8391	990	8580	990	8789	990

Manning's n Values				num= 5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2000	.055	3000	.05	4995	.04	5279	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 4995 5279 52 52 52 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 880.4

INPUT

Description: US side of Dublin-Granville Road

Station Elevation Data		num= 83							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	979	295	977	500	977	700	977	900	977
1100	977	1300	977	1500	977	1561	977	1756	973
1756	986	1795	986	1795	973	1952	973	1969	973
2000	972.5	2293	968	2558	962	2650	958	2900	958
3000	958	3100	958	3300	958	3500	958	3700	958
3900	958	4150	958	4416	958	4645	958	4660	958
4851	956	5005	953	5014	953.8	5014.1	951.2	5018	950.6
5033	945.8	5035	945.3	5036.2	945	5036.3	953.6	5037.7	953.6
5037.8	945	5052	945.1	5058	945.6	5066.2	946.5	5066.3	953.3
5067.7	953.3	5067.8	946.5	5070	946.5	5074	946.5	5082	950.5
5090.9	951.3	5091	953.1	5092	954	5150	954	5400	954
5600	954	5767	954	6003	963	6221	971	6260	971
6350	971	6370	970	6478	970	6542	963	6585	958
6800	958	7065	958	7124	959	7341	966	7602	971
7891	980	8039	983.5	8040	999	8070	999	8071	984.4
8129	986	8129	1002	8203	1002	8203	986	8411	988
8570	988	8660	988	8802	988				

Manning's n Values		num= 5							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2000	.055	3000	.05	5014	.04	5091	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 5014 5091 43.18 43.18 43.18 .6 .8

Ineffective Flow		num= 2	
Sta L	Sta R	Elev	Permanent
0	5014	955.7	F
5091	8802	954	F

Sediment Elevation = 0

BRIDGE

RIVER: Rocky Fork  
 REACH: 1 RS: 880.3

INPUT

Description: Bridge #2 - E Dublin Granville Road

Distance from Upstream XS = 1  
 Deck/Roadway Width = 41.18  
 Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num= 38

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
0	979	0	300	977	0	1560	977	0
1754	973	0	1755	986	0	1795	986	0
1796	973	0	1970	973	0	2295	968	0
2560	962	0	2650	958	0	4460	958	0
4750	957	0	5013	955.7	0	5014	957.2	953.8
5091	956.5	953.1	5092	955	0	5290	955	0
5770	955	0	6220	971	0	6350	971	0
6370	972	0	6480	970	0	6585	958	0
7065	958	0	7340	966	0	7600	971	0
7890	980	0	8039	983	0	8040	999	0
8070	999	0	8071	984	0	8129	986	0
8130	1002	0	8200	1002	0	8201	986	0
8410	988	0	8802	988	0			

Upstream Bridge Cross Section Data

Station Elevation Data

num= 83

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	979	295	977	500	977	700	977	900	977
1100	977	1300	977	1500	977	1561	977	1756	973
1756	986	1795	986	1795	973	1952	973	1969	973
2000	972.5	2293	968	2558	962	2650	958	2900	958
3000	958	3100	958	3300	958	3500	958	3700	958
3900	958	4150	958	4416	958	4645	958	4660	958
4851	956	5005	953	5014	953.8	5014.1	951.2	5018	950.6
5033	945.8	5035	945.3	5036.2	945	5036.3	953.6	5037.7	953.6
5037.8	945	5052	945.1	5058	945.6	5066.2	946.5	5066.3	953.3
5067.7	953.3	5067.8	946.5	5070	946.5	5074	946.5	5082	950.5
5090.9	951.3	5091	953.1	5092	954	5150	954	5400	954
5600	954	5767	954	6003	963	6221	971	6260	971
6350	971	6370	970	6478	970	6542	963	6585	958
6800	958	7065	958	7124	959	7341	966	7602	971
7891	980	8039	983.5	8040	999	8070	999	8071	984.4
8129	986	8129	1002	8203	1002	8203	986	8411	988
8570	988	8660	988	8802	988				

Manning's n Values

num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2000	.055	3000	.05	5014	.04	5091	.05

Bank Sta: Left Right Coeff Contr. Expan.  
 5014 5091 .6 .8

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 5014 955.7 F  
 5091 8802 954 F  
 Sediment Elevation = 0

Downstream Deck/Roadway Coordinates

num= 38

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0	979	0	300	977	0	1560	977	0						
1754	973	0	1755	986	0	1795	986	0						
1796	973	0	1970	973	0	2295	968	0						
2560	962	0	2650	958	0	4460	958	0						
4750	957	0	5013	955.7	0	5014	957.2	953.8						
5091	956.5	953.1	5092	955	0	5290	955	0						
5770	955	0	6220	971	0	6350	971	0						
6370	972	0	6480	970	0	6585	958	0						
7065	958	0	7340	966	0	7600	971	0						
7890	980	0	8039	983	0	8040	999	0						
8070	999	0	8071	984	0	8129	986	0						
8130	1002	0	8200	1002	0	8201	986	0						
8410	988	0	8802	988	0									

Downstream Bridge Cross Section Data

Station Elevation Data num= 62

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	980	272	979	553	977	595	976	860	976
1100	976	1400	976	1558	976	1767	973	1939	972
1959	972	2127	970	2332	968	2606	962	2730	957
2750	957	3000	957	3300	957	3600	957	3900	957
4200	957	4500	957	4736	957	4979	953	5001	953.8
5001.1	951.2	5005	950.6	5015	947.4	5020	949.8	5023.2	948
5023.3	953.6	5024.7	953.6	5024.8	945	5039	945.1	5045	945.6
5053.2	946.5	5053.3	953.3	5054.7	953.3	5054.8	946.5	5061	946.5
5065	948.5	5069	950.5	5077.9	951.3	5078	953.1	5084	949
5367	951	5621	953	5791	956	6067	967	6286	972
6446	964	6555	960	6700	958	6995	958	7127	962
7383	967	7631	972	7887	979	8135	984	8371	986
8550	986	8804	986						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.055	2750	.05	5001	.04	5078	.05

Bank Sta: Left Right Coeff Contr. Expan.  
 5001 5078 .6 .8

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 5001 953.8 F  
 5078 8804 953.1 F

Sediment Elevation = 0

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
Maximum allowable submergence for weir flow = .98  
Elevation at which weir flow begins = 955  
Energy head used in spillway design =  
Spillway height used in design =  
Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station Upstream= 5052.5 Downstream= 5039.5  
Upstream num= 2  
Width Elev Width Elev  
3.8 945 3.8 953.8  
Downstream num= 2  
Width Elev Width Elev  
3.8 945 3.8 953.8

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Yarnell KVal = 1.15  
Selected Low Flow Methods = Yarnell

High Flow Method

Pressure and Weir flow  
Submerged Inlet Cd =  
Submerged Inlet + Outlet Cd =.8164966  
Max Low Cord = 953.8

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 880.2

INPUT

Description: DS side of Dublin-Granville Road

Station Elevation Data num= 62  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

0	980	272	979	553	977	595	976	860	976
1100	976	1400	976	1558	976	1767	973	1939	972
1959	972	2127	970	2332	968	2606	962	2730	957
2750	957	3000	957	3300	957	3600	957	3900	957
4200	957	4500	957	4736	957	4979	953	5001	953.8
5001.1	951.2	5005	950.6	5015	947.4	5020	949.8	5023.2	948
5023.3	953.6	5024.7	953.6	5024.8	945	5039	945.1	5045	945.6
5053.2	946.5	5053.3	953.3	5054.7	953.3	5054.8	946.5	5061	946.5
5065	948.5	5069	950.5	5077.9	951.3	5078	953.1	5084	949
5367	951	5621	953	5791	956	6067	967	6286	972
6446	964	6555	960	6700	958	6995	958	7127	962
7383	967	7631	972	7887	979	8135	984	8371	986
8550	986	8804	986						

Manning's n Values num= 4  
 Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .055 2750 .05 5001 .04 5078 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 5001 5078 52 52 52 .6 .8

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 5001 953.8 F  
 5078 8804 953.1 F

Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 880.1

INPUT

Description:

Station Elevation Data num= 57									
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev									
0 979 278 978 643 976 700 976 950 976									
1200 976 1380 976 1550 976 1600 976 1762 973									
1762 986 1800 986 1800 973 1939 972 1958 972									
2114 970 2406 966 2629 962 2740 957.8 2760 957									
3000 957 3300 957 3600 957 3900 957 4115 957									
4427 957 4460 957 4500 957 4532 957 4736 955									
5003 951 5035 945.5 5037 945 5073 945 5075 945.5									
5099 949 5263 950 5422 950 5450 950 5500 950									
5514 950 5720 954 5745 956 5936 962 6200 971									
6275 970 6491 964 6575 958 6700 958 6895 958									
7080 963 7285 965 7599 972 7926 979 8258 986									
8500 986 8803 986									

Manning's n Values num= 4



Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.055	2740	.05	5003	.04	5263	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	5003	5263		639	639		.6	.8
Sediment Elevation = 0								

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 879

INPUT

Description: FEMA CROSS SECTION AA

Station	Elevation	Data	num=	57					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	978	261	978	355	977	600	977	961	977
1069	974	1200	974	1400	974	1600	974	1663	974
1663	990	1714	990	1714	974	1833	974	1851	974
1860	973.9	1967	973	2184	972	2460	969	2706	965
2978	956	3020	954	3250	954	3450	954	3601	954
3828	954	3865	953	4050	953	4184	953	4431	952
4692	948	4910	948	4999	948	5030	944	5032	943.5
5052	943.5	5054	944	5092	949	5305	949	5422	949
5553	953	5661	958	5793	961	5928	962	6060	962
6250	962	6480	962	6725	962	6736	963	6957	963
7177	970	7521	972	7660	972	7870	972	8254	978
8527	981	8900	983						

Manning's n Values	num=	5							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1860	.055	4910	.05	4999	.035	5092	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	4999	5092		881.76	881.76		.1	.3
Sediment Elevation = 0								

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 878

INPUT

Description: FEMA CROSS SECTION Z

Station	Elevation	Data	num=	35					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	962	359	959	642	957	881	955	1067	952
1100	951.7	1172	951	1272	950	1350	950	1550	950

1659	950	1870	949	2150	948	2431	949	2640	947.4
2691	947	2724	944	2726	943	2750	943	2752	944
2769	948	2941	951	3167	956	3351	956	3500	956
3800	956	4050	956	4300	956	4390	956	4514	965
4731	971	4947	975	5285	976	5567	976	5805	978

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1100	.055	2431	.05	2640	.035	2769	.05
4300	.055								

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2431 2769 1778.96 1778.96 1778.96 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 877

INPUT

Description: FEMA CROSS SECTION Y

Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	964	164	963	190	959	220	959	227	959
323	955	435	952	650	952	840	952	1000	952
1093	952	1396	952	1716	951	2056	950	2377	950
2480	948.8	2627	947	2818	944	2839	943	2842	941.5
2865	941.5	2868	943	2885	944	2956	946	2990	946
3050	946	3194	950	3294	951	3300	951	3469	952
3680	952	3900	952	4200	952	4450	952	4660	952
4750	952	4877	956	4950	956	5090	956	5304	966
5400	966	5530	966	5729	971	5927	971	6150	974
6378	977	6692	981	6770	981	6966	981		

Manning's n Values num= 7

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	2480	.055	2627	.035	2956	.055	3300	.05
4660	.055	6770	.05						

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 2627 2956 1547.08 1547.08 1547.08 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 876

INPUT

Description: FEMA CROSS SECTION X

Station Elevation Data		num=		57					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	988	50	988	62	988	233	988	370	985
577	980	832	972	1076	970	1115	969	1210	969
1220	969	1240	969	1377	965	1460	963	1750	963
2000	963	2250	963	2500	963	2665	963	2810	961
2950	961	3005	961	3074	960	3213	952	3240	952
3380	952	3389	952	3530	945	3627	942	3655	939
3659	937	3675	937	3679	939	3699	941	3817	943
3932	946	3960	946	4055	946	4099	948	4376	953
4580	953.6	4705	954	4800	954	5050	954	5300	954
5550	954	5800	954	5910	954	6000	954	6250	954
6602	966	6891	969	7204	971	7594	974	7890	977
8100	977	8358	977						

Manning's n Values		num=		5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	3627	.035	3817	.05	4580	.055	5910	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 3627 3817 2292 2292 2292 .1 .3  
 Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 875.5

INPUT

Description: FEMA CROSS SECTION W

Station Elevation Data		num=		55					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	972	33	971	33	998	70	998	70	971
159	960	359	966	400	964	440	964	451	964
469	964	486	964	525	963	800	963	1100	963
1400	963	1700	965	1879	963	2093	959	2190	956
2260	956	2314	956	2494	954	2600	954	2800	954
3000	954	3056	954	3056	972	3111	972	3111	954
3334	951	3416	951	3504	949	3659	946	3685	946
3912	938	3928	936	3932	934	3947	934	3951	936
3976	940	4017	941	4283	942	4455	947	4600	947
4760	947	5012	951	5334	956	5590	956	5887	962
5887	983	5959	983	5959	962	6228	964	6949	964

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val

0 .05 3912 .035 3976 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
3912 3976 33 33 33 .1 .3  
Sediment Elevation = 0

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 875.4

INPUT

Description:

Station Elevation Data num= 55  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
0 972 33 971 33 998 70 998 70 971  
159 968 359 966 400 964 435 964 451 964  
469 964 486 964 520 963 800 963 1100 963  
1400 963 1680 963 1879 963 2093 959 2190 956  
2250 956 2314 956 2494 954 2620 954 2800 954  
2950 954 3056 954 3056 972 3111 972 3111 954  
3255 952 3378 952 3585 948 3681 946 3706 946  
3902 940 3921.3 942.1 3921.4 935.5 3922 935.5 3946 934.1  
3969 933.9 3970.6 933.9 3970.7 942.1 3995 940 4028 941  
4332 943 4554 946 4855 949 5214 952 5555 956  
5802 958 6065 965 6300 965 6600 965 6952 965

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
0 .05 3921.3 .035 3970.7 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
3921.3 3970.7 40 40 40 .1 .3

Ineffective Flow num= 2  
Sta L Sta R Elev Permanent  
0 3921.3 944 F  
3970.7 6952 943 F  
Sediment Elevation = 0

BRIDGE

RIVER: Rocky Fork  
REACH: 1 RS: 875.3

INPUT

Description: Bridge #1 - Thompson Road

Distance from Upstream XS = 2

Deck/Roadway Width = 36  
 Weir Coefficient = 3

Upstream Deck/Roadway Coordinates

num= 33														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0		972	0		34		971	0		35		998	0	
70		998	0		71		971	0		160		968	0	
360		966	0		400		964	0		490		964	0	
520		963	0		1880		963	0		2090		959	0	
2185		956	0		2310		956	0		2490		954	0	
3054		954	0		3055		972	0		3110		972	0	
3111		954	0		3250		952	0		3375		952	0	
3420		951	0		3440		951	0		3700		947	0	
3921		944	0		3921.3	947.2	942.1	3970.7	947.2	942.1				
3971		944	0		4190		943	0		4550		946	0	
5800		958	0		6060		965	0		6952		965	0	

Upstream Bridge Cross Section Data

Station Elevation Data num= 55									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	972	33	971	33	998	70	998	70	971
159	968	359	966	400	964	435	964	451	964
469	964	486	964	520	963	800	963	1100	963
1400	963	1680	963	1879	963	2093	959	2190	956
2250	956	2314	956	2494	954	2620	954	2800	954
2950	954	3056	954	3056	972	3111	972	3111	954
3255	952	3378	952	3585	948	3681	946	3706	946
3902	940	3921.3	942.1	3921.4	935.5	3922	935.5	3946	934.1
3969	933.9	3970.6	933.9	3970.7	942.1	3995	940	4028	941
4332	943	4554	946	4855	949	5214	952	5555	956
5802	958	6065	965	6300	965	6600	965	6952	965

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
0	.05	3921.3	.035	3970.7	.05

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	3921.3	3970.7		.1	.3

Ineffective Flow num= 2			
Sta L	Sta R	Elev	Permanent
0	3921.3	944	F
3970.7	6952	943	F

Sediment Elevation = 0

Downstream Deck/Roadway Coordinates

num= 33														
Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
0		972	0		34		971	0		35		998	0	
70		998	0		71		971	0		160		968	0	
360		966	0		400		964	0		490		964	0	

520	963	0	1880	963	0	2090	959	0
2185	956	0	2310	956	0	2490	954	0
3054	954	0	3055	972	0	3110	972	0
3111	954	0	3250	952	0	3375	952	0
3420	951	0	3440	951	0	3700	947	0
3921	944	0	3921.3	947.2	942.1	3970.7	947.2	942.1
3971	944	0	4190	943	0	4550	946	0
5800	958	0	6060	965	0	6952	965	0

Downstream Bridge Cross Section Data

Station Elevation Data num= 49

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	971	145	970	235	966	428	963	430	963
750	963	1000	963	1250	963	1500	963	1838	963
2228	957	2330	956	2680	956	2930	956	3000	956
3037	956	3248	953	3272	953	3310	951	3349	951
3423	951	3526	951	3595	948	3655	947	3750	947
3815	947	3950	938	3958	936	3959.3	942.1	3959.4	935.5
3984	934.1	4001	934	4008.6	933.9	4008.7	942.1	4019	941
4047	941	4323	943	4528	946	4905	951	5160	952
5220	953.6	5310	956	5653	957	5910	961	6106	964
6449	964	6650	964	6720	964	6952	964		

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	3958	.035	4008.7	.05	5220	.055	5910	.05
6720	.055								

Bank Sta: Left Right Coeff Contr. Expan.  
 3959.3 4008.7 .1 .3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
0	3959.3	942.5	F
4008.7	6952	941	F

Sediment Elevation = 0

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins = 943  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 1

Pier Data

Pier Station	Upstream=	3946	Downstream=	3984
Upstream	num=	2		
Width	Elev	Width	Elev	



Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
3959.3	4008.7	50.95	50.95	50.95		.1	.3
Ineffective Flow		num=	2				
Sta L	Sta R	Elev	Permanent				
0	3959.3	942.5	F				
4008.7	6952	941	F				
Sediment Elevation = 0							

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 875.1

INPUT

Description:

Station Elevation Data	num=	54							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	971	145	970	235	966	428	963	430	963
700	963	1000	963	1200	963	1500	963	1838	963
2228	957	2330	956	2560	956	2750	956	2940	956
3000	956	3037	956	3248	953	3272	953	3310	951
3349	951	3370	951	3430	951	3498.8	951	3621	948
3670	947	3750	947	3796	947	3969	939	3980	936
3985	933.5	4019	933.5	4024	936	4044	940	4060	940
4240	941	4498	946	4498	969	4529	969	4529	946
4550	946	4625	946	4800	949	5084	953	5200	954.5
5313	956	5596	957	5886	960	5930	960.8	6116	964
6509	964	6530	964	6720	964	6955	964		

Manning's n Values	num=	6							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	3969	.035	4044	.05	5200	.055	5930	.05
6530	.055								

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
3969	4044	1172.1	1172.1	1172.1		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 874

INPUT

Description: FEMA CROSS SECTION V

Station Elevation Data	num=	56							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	969	237	966	254	964	273	964	298	962
370	961	600	961	800	961	1000	961	1200	961



1400	961	1653	961	1873	960	2185	956	2400	956
2700	956	2835	956	2949	954	2976	954	3092	952
3092	967	3160	967	3160	952	3226	951	3285	950
3522	948	3620	947.3	3802	946	3900	946	4100	946
4143	946	4228	943	4368	941	4388	934	4392	932
4412	932	4416	934	4439	937	4546	941	4600	941
4620	941	4750	941	4828	945	5104	953	5259	957
5260	972	5320	972	5321	958	5343	959	5507	960
5687	963	5900	963	6200	963	6500	963	6843	963
7137	964								

Manning's n Values		num=		5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	3620	.055	4368	.035	4546	.055	4620	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	4368	4546		2101	2101		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 873

INPUT

Description: FEMA CROSS SECTION U

Station Elevation Data		num=		55					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	973	250	973	500	973	750	973	850	973
933	973	1158	971	1444	964	1726	961	2009	956
2100	956	2280	956	2303	956	2303	970	2344	970
2345	956	2454	954	2574	954	2650	953	2830	953
2900	953	2915	953	3021	952	3038	952	3250	950.4
3301	950	3460	946	3575	946	3700	946	3727	936
3735	931	3769	931	3773	933	3801	934	3906	935
3986	934	4075	936	4110	937.2	4252	942	4370	945.2
4508	949	4580	949	4873	949	5124	951	5406	954
5746	958	5989	958	6098	959	6253	962	6380	959
6520	959	6633	960	6989	961	7323	962	7644	964

Manning's n Values		num=		9					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.055	850	.05	3250	.055	3575	.05	3727	.035
4075	.055	4110	.05	4370	.055	4580	.05		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	3727	4075		1330	1330		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Rocky Fork

	Reach		River Sta.	n1	n2	n3	n4	n5
	n6	n7	n8	n9				
1			885	.05	.055	.035	.055	
.05	.055							
1			884.50	.05	.055	.05	.035	
.05								
1			884.4	.05	.055	.05	.035	
.05								
1			884.2	.05	.055	.035	.05	
1			884.1	.05	.055	.035	.05	
1			883	.05	.035	.055	.05	
1			882	.05	.035	.055	.05	
.055								
1			881	.05	.055	.035	.055	
.05	.055							
1			880.5	.05	.055	.05	.04	
.05								
1			880.4	.05	.055	.05	.04	
.05								
1			880.3	Bridge				
1			880.2	.055	.05	.04	.05	
1			880.1	.055	.05	.04	.05	
1			879	.05	.055	.05	.035	
.05								
1			878	.05	.055	.05	.035	
.05	.055							
1			877	.05	.055	.035	.055	
.05	.055		.05					
1			876	.05	.035	.05	.055	
.05								
1			875.5	.05	.035	.05		
1			875.4	.05	.035	.05		
1			875.3	Bridge				
1			875.2	.05	.035	.05	.055	

.05	.055					
1		875.1	.05	.035	.05	.055
.05	.055					
1		874	.05	.055	.035	.055
.05						
1		873	.055	.05	.055	.05
.035	.055	.05	.055	.05		

SUMMARY OF REACH LENGTHS

River: Rocky Fork

Reach	River Sta.	Left	Channel	Right
1	885	1077	1077	1077
1	884.50	53	53	53
1	884.4	19.01	19.01	19.01
1	884.2	53	53	53
1	884.1	1262.06	1262.06	1262.06
1	883	1653	1653	1653
1	882	1294	1294	1294
1	881	982	982	982
1	880.5	52	52	52
1	880.4	43.18	43.18	43.18
1	880.3	Bridge		
1	880.2	52	52	52
1	880.1	639	639	639
1	879	881.76	881.76	881.76
1	878	1778.96	1778.96	1778.96
1	877	1547.08	1547.08	1547.08
1	876	2292	2292	2292
1	875.5	33	33	33
1	875.4	40	40	40
1	875.3	Bridge		
1	875.2	50.95	50.95	50.95
1	875.1	1172.1	1172.1	1172.1
1	874	2101	2101	2101
1	873	1330	1330	1330

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS

River: Rocky Fork

Reach	River Sta.	Contr.	Expan.
1	885	.1	.3
1	884.50	.1	.3
1	884.4	.1	.3
1	884.2	.1	.3
1	884.1	.1	.3
1	883	.1	.3
1	882	.1	.3
1	881	.1	.3
1	880.5	.1	.3
1	880.4	.6	.8
1	880.3	Bridge	
1	880.2	.6	.8
1	880.1	.6	.8
1	879	.1	.3
1	878	.1	.3
1	877	.1	.3
1	876	.1	.3
1	875.5	.1	.3
1	875.4	.1	.3
1	875.3	Bridge	
1	875.2	.1	.3
1	875.1	.1	.3
1	874	.1	.3
1	873	.1	.3

APPENDIX D:

Existing Conditions HEC-RAS Model

HEC-RAS Plan: FEMA Ex River: Rocky Fork Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	887.50	100-year	2760.00	957.90	970.03		970.05	0.000068	1.07	2927.87	580.51	0.07
1	887.50	FW	2760.00	957.90	970.02		970.06	0.000113	1.60	1944.78	323.52	0.10
1	887.50	10-year	1220.00	957.90	967.12		967.13	0.000095	0.92	1378.06	420.52	0.08
1	887.50	50-year	2210.00	957.90	969.25		969.26	0.000069	1.00	2479.03	560.46	0.07
1	887.50	500-year	4520.00	957.90	972.34		972.36	0.000061	1.22	4329.66	636.29	0.07
1	886.69	100-year	2760.00	958.40	969.61	962.12	969.99	0.000876	5.51	905.25	551.77	0.29
1	886.69	FW	2760.00	958.40	969.61	962.12	969.99	0.000877	5.51	905.15	551.75	0.29
1	886.69	10-year	1220.00	958.40	967.04	960.56	967.11	0.000178	2.09	586.83	94.88	0.13
1	886.69	50-year	2210.00	958.40	969.09	961.60	969.23	0.000288	3.06	725.57	478.56	0.17
1	886.69	500-year	4520.00	958.40	972.25	963.56	972.34	0.000269	3.51	2748.78	814.68	0.17
1	886.6		Bridge									
1	886.51	100-year	2760.00	958.40	969.40		969.70	0.000616	4.56	789.57	522.47	0.24
1	886.51	FW	2760.00	958.40	969.40		969.70	0.000616	4.56	789.55	522.46	0.24
1	886.51	10-year	1220.00	958.40	966.93		967.01	0.000190	2.14	571.31	94.51	0.13
1	886.51	50-year	2210.00	958.40	968.70		968.86	0.000334	3.21	689.52	409.79	0.18
1	886.51	500-year	4520.00	958.40	972.21	963.61	972.31	0.000277	3.56	2713.23	812.33	0.17
1	886.4	100-year	2760.00	961.00	968.49		969.49	0.004357	8.61	434.78	351.04	0.58
1	886.4	FW	2760.00	961.00	968.49		969.49	0.004357	8.61	434.78	351.04	0.58
1	886.4	10-year	1220.00	961.00	966.43		966.91	0.003193	5.79	269.03	287.14	0.47
1	886.4	50-year	2210.00	961.00	967.91		968.71	0.003861	7.64	387.25	337.79	0.54
1	886.4	500-year	4520.00	961.00	969.36	968.46	971.97	0.009049	13.45	559.47	367.70	0.86
1	886.3	100-year	2760.00	960.30	967.40		968.18	0.003528	7.70	548.41	248.75	0.52
1	886.3	FW	2760.00	960.30	967.40		968.18	0.003528	7.70	548.44	248.76	0.52
1	886.3	10-year	1220.00	960.30	965.65		966.02	0.002285	5.07	307.99	209.76	0.40
1	886.3	50-year	2210.00	960.30	966.87		967.55	0.003254	7.00	435.72	233.00	0.50
1	886.3	500-year	4520.00	960.30	968.83		969.57	0.003082	8.19	915.58	264.32	0.51
1	886.2	100-year	2760.00	960.05	965.95		966.37	0.003483	6.67	889.08	259.47	0.51
1	886.2	FW	2760.00	960.05	965.96		966.37	0.003481	6.67	889.27	259.48	0.51
1	886.2	10-year	1220.00	960.05	964.38		964.66	0.003242	5.11	490.84	244.78	0.46
1	886.2	50-year	2210.00	960.05	965.46		965.83	0.003409	6.19	761.75	255.19	0.49
1	886.2	500-year	4520.00	960.05	967.53		968.01	0.003152	7.54	1308.71	273.42	0.50
1	886.1	100-year	2760.00	958.50	964.81		965.15	0.002750	6.16	1023.82	342.46	0.45
1	886.1	FW	2760.00	958.50	964.81		965.15	0.002743	6.15	1024.92	342.78	0.45
1	886.1	10-year	1220.00	958.50	963.36		963.57	0.002195	4.52	589.76	285.51	0.39
1	886.1	50-year	2210.00	958.50	964.32		964.63	0.002670	5.72	869.93	294.06	0.44
1	886.1	500-year	4520.00	958.50	966.75		967.04	0.001871	6.18	1789.44	428.22	0.39
1	886	100-year	2760.00	956.20	963.67		963.81	0.001274	4.83	1831.85	575.03	0.32
1	886	FW	2760.00	956.20	963.68		963.82	0.001256	4.81	1841.50	575.30	0.32
1	886	10-year	1220.00	956.20	961.59		961.86	0.002341	5.22	709.53	479.65	0.41
1	886	50-year	2210.00	956.20	962.95		963.12	0.001601	5.05	1423.84	561.73	0.35
1	886	500-year	4520.00	956.20	966.23		966.31	0.000600	4.07	3353.40	609.46	0.23
1	885.2	100-year	2760.00	954.20	963.05		963.19	0.000894	4.42	1734.78	409.83	0.27
1	885.2	FW	2760.00	954.20	963.08		963.21	0.000879	4.39	1745.72	410.07	0.27
1	885.2	10-year	1220.00	954.20	960.69		960.86	0.001202	4.10	799.41	381.47	0.30
1	885.2	50-year	2210.00	954.20	962.23		962.38	0.001016	4.39	1401.57	401.04	0.28
1	885.2	500-year	4520.00	954.20	965.84		965.96	0.000609	4.42	2969.49	510.66	0.23
1	885.1	100-year	2760.00	953.60	962.75		962.83	0.000555	3.48	2053.89	419.76	0.21
1	885.1	FW	2760.00	953.60	962.78		962.86	0.000545	3.46	2067.42	420.05	0.21
1	885.1	10-year	1220.00	953.60	960.34		960.42	0.000626	2.95	1071.73	394.34	0.21
1	885.1	50-year	2210.00	953.60	961.90		961.98	0.000606	3.39	1699.30	412.08	0.22
1	885.1	500-year	4520.00	953.60	965.63		965.71	0.000392	3.57	3311.55	472.36	0.19
1	884	100-year	2760.00	953.30	962.40		962.53	0.000799	4.25	1734.99	402.62	0.26
1	884	FW	2760.00	953.30	962.44		962.57	0.000780	4.21	1751.24	403.24	0.25
1	884	10-year	1220.00	953.30	959.85		960.02	0.001149	4.02	753.93	363.69	0.29
1	884	50-year	2210.00	953.30	961.49		961.64	0.000938	4.27	1374.98	390.03	0.27
1	884	500-year	4520.00	953.30	965.42		965.52	0.000476	4.02	3023.91	450.00	0.21
1	883.7	100-year	2760.00	952.90	962.22		962.33	0.000618	3.83	1974.58	459.64	0.23
1	883.7	FW	2760.00	952.90	962.26		962.37	0.000601	3.79	1995.36	460.61	0.23
1	883.7	10-year	1220.00	952.90	959.62		959.73	0.000761	3.36	885.87	358.05	0.24
1	883.7	50-year	2210.00	952.90	961.27		961.40	0.000728	3.85	1551.16	436.29	0.24
1	883.7	500-year	4520.00	952.90	965.31		965.40	0.000385	3.70	3526.97	576.66	0.19
1	883.6	100-year	2760.00	952.60	961.54		961.95	0.001788	6.33	967.95	249.32	0.39
1	883.6	FW	2760.00	952.60	961.61		962.01	0.001718	6.24	984.72	250.55	0.38
1	883.6	10-year	1220.00	952.60	958.92		959.29	0.002090	5.33	382.29	142.16	0.39
1	883.6	50-year	2210.00	952.60	960.47		960.94	0.002248	6.48	713.17	229.92	0.42

HEC-RAS Plan: FEMA Ex River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	883.6	500-year	4520.00	952.60	964.87		965.17	0.001017	5.96	1885.59	312.81	0.31
1	883.5	100-year	2760.00	952.50	961.17	958.00	961.72	0.002286	5.92	468.51	311.11	0.41
1	883.5	FW	2760.00	952.50	961.25	958.00	961.78	0.002199	5.85	474.63	320.64	0.40
1	883.5	10-year	1220.00	952.50	958.79	956.05	959.05	0.001681	4.07	299.99	65.73	0.34
1	883.5	50-year	2210.00	952.50	960.20	957.40	960.69	0.002472	5.57	396.81	151.60	0.42
1	883.5	500-year	4520.00	952.50	964.81	959.57	965.06	0.000776	4.63	2008.27	923.18	0.26
1	883.45		Bridge									
1	883.4	100-year	2760.00	952.50	960.63		961.31	0.002839	6.64	426.76	323.08	0.47
1	883.4	FW	2760.00	952.50	960.69		961.35	0.002756	6.58	430.89	328.58	0.46
1	883.4	10-year	1220.00	952.50	958.67		958.95	0.001944	4.28	287.20	206.62	0.36
1	883.4	50-year	2210.00	952.50	960.00		960.54	0.002597	5.92	380.06	260.78	0.44
1	883.4	500-year	4520.00	952.50	962.17		963.33	0.003643	8.70	540.90	399.65	0.55
1	883.3	100-year	2760.00	952.40	960.62		960.91	0.001512	5.56	1092.50	261.55	0.35
1	883.3	FW	2760.00	952.40	960.68		960.96	0.001459	5.49	1107.27	262.01	0.35
1	883.3	10-year	1220.00	952.40	958.55		958.74	0.001283	4.16	600.51	235.59	0.31
1	883.3	50-year	2210.00	952.40	959.94		960.20	0.001485	5.18	927.61	256.27	0.34
1	883.3	500-year	4520.00	952.40	962.32		962.70	0.001661	6.65	1514.81	275.45	0.38
1	883.2	100-year	2760.00	952.20	960.36		960.55	0.001113	4.59	1368.22	312.75	0.30
1	883.2	FW	2760.00	952.20	960.43		960.61	0.001066	4.52	1390.78	313.72	0.29
1	883.2	10-year	1220.00	952.20	958.30		958.43	0.001020	3.53	747.11	290.99	0.27
1	883.2	50-year	2210.00	952.20	959.68		959.85	0.001112	4.30	1157.53	304.62	0.29
1	883.2	500-year	4520.00	952.20	962.06		962.30	0.001187	5.44	1915.78	329.72	0.32
1	883.1	100-year	2760.00	951.80	959.77		960.04	0.001490	5.33	1134.70	280.31	0.35
1	883.1	FW	2760.00	951.80	959.87		960.13	0.001395	5.20	1164.80	281.63	0.34
1	883.1	10-year	1220.00	951.80	957.81		957.99	0.001222	3.93	615.49	242.97	0.30
1	883.1	50-year	2210.00	951.80	959.08		959.34	0.001498	5.01	946.19	271.84	0.34
1	883.1	500-year	4520.00	951.80	961.39		961.75	0.001654	6.41	1607.79	311.52	0.38
1	883	100-year	2760.00	951.40	959.18		959.43	0.001492	5.19	1216.79	315.36	0.34
1	883	FW	2760.00	951.40	959.34		959.57	0.001337	4.99	1268.98	316.85	0.32
1	883	10-year	1220.00	951.40	957.23		957.43	0.001445	4.14	616.63	299.85	0.32
1	883	50-year	2210.00	951.40	958.45		958.71	0.001619	5.04	989.18	309.88	0.35
1	883	500-year	4520.00	951.40	960.79		961.09	0.001549	6.06	1736.95	332.52	0.36
1	882	100-year	2760.00	951.10	958.52		958.68	0.001140	4.47	1726.54	569.82	0.30
1	882	FW	2760.00	951.10	958.80		958.93	0.000918	4.12	1889.26	585.06	0.27
1	882	10-year	1220.00	951.10	956.08		956.36	0.002440	4.85	497.59	420.59	0.41
1	882	50-year	2210.00	951.10	957.55		957.77	0.001684	4.90	1196.77	519.69	0.36
1	882	500-year	4520.00	951.10	960.25		960.40	0.000931	4.69	2806.77	683.17	0.28
1	881.9	100-year	2760.00	949.50	958.08		958.28	0.000939	4.05	1102.42	819.29	0.27
1	881.9	FW	2760.00	949.50	958.43		958.60	0.000788	3.83	1179.68	224.26	0.25
1	881.9	10-year	1220.00	949.50	955.51		955.67	0.001228	3.38	526.39	765.75	0.29
1	881.9	50-year	2210.00	949.50	957.02		957.23	0.001178	4.05	864.06	797.28	0.30
1	881.9	500-year	4520.00	949.50	959.70		960.00	0.001104	5.06	1465.51	848.71	0.31
1	881.8	100-year	2760.00	949.40	957.54		958.12	0.001429	6.44	480.51	76.64	0.40
1	881.8	FW	2760.00	949.40	957.86		958.45	0.001360	6.44	466.99	60.00	0.39
1	881.8	10-year	1220.00	949.40	955.30		955.55	0.000922	4.16	319.42	67.07	0.30
1	881.8	50-year	2210.00	949.40	956.54		957.05	0.001496	6.03	405.84	72.36	0.40
1	881.8	500-year	4520.00	949.40	958.61		959.74	0.002406	9.08	565.16	81.24	0.53
1	881.7	100-year	2760.00	949.20	957.37		957.93	0.001373	6.29	483.95	75.84	0.39
1	881.7	FW	2760.00	949.20	957.69		958.27	0.001301	6.29	471.05	60.00	0.38
1	881.7	10-year	1220.00	949.20	955.20		955.43	0.000839	3.99	328.61	67.19	0.29
1	881.7	50-year	2210.00	949.20	956.36		956.86	0.001437	5.89	409.33	71.85	0.39
1	881.7	500-year	4520.00	949.20	958.24		959.42	0.002515	9.13	551.91	79.29	0.54
1	881.6	100-year	2760.00	949.00	956.97		957.52	0.002369	6.93	730.24	445.88	0.44
1	881.6	FW	2760.00	949.00	957.37		957.87	0.002002	6.59	711.23	117.00	0.41
1	881.6	10-year	1220.00	949.00	954.87		955.15	0.001674	4.70	426.59	129.75	0.35
1	881.6	50-year	2210.00	949.00	955.80		956.38	0.002953	6.93	553.09	286.47	0.48
1	881.6	500-year	4520.00	949.00	957.10		958.50	0.005946	11.10	750.89	453.06	0.70
1	881.5	100-year	2760.00	948.00	957.14		957.17	0.000258	2.29	4029.80	1420.64	0.14
1	881.5	FW	2760.00	948.00	957.29		957.41	0.000644	3.67	1575.45	290.41	0.23
1	881.5	10-year	1220.00	948.00	954.74		954.81	0.000526	2.57	1076.94	1235.01	0.19
1	881.5	50-year	2210.00	948.00	955.76		955.84	0.000648	3.19	2086.09	1367.08	0.22
1	881.5	500-year	4520.00	948.00	957.69		957.74	0.000441	3.13	4805.26	1428.02	0.19
1	881.1	100-year	2760.00	946.50	956.98		957.00	0.000155	2.04	4348.03	1022.10	0.12
1	881.1	FW	2760.00	946.50	957.07		957.11	0.000193	2.30	3008.85	475.00	0.13

HEC-RAS Plan: FEMA Ex River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	881.1	10-year	1220.00	946.50	954.57		954.59	0.000131	1.56	2259.33	668.96	0.10
1	881.1	50-year	2210.00	946.50	955.45		955.49	0.000257	2.35	2886.44	812.56	0.15
1	881.1	500-year	4520.00	946.50	957.36		957.41	0.000330	3.07	4740.85	1043.35	0.17
1	880.66	100-year	2760.00	946.20	956.93		956.93	0.000053	1.19	7308.48	1648.44	0.07
1	880.66	FW	2760.00	946.20	956.93		956.97	0.000174	2.15	2647.99	433.00	0.12
1	880.66	10-year	1220.00	946.20	954.51		954.52	0.000060	1.04	3626.81	1397.83	0.07
1	880.66	50-year	2210.00	946.20	955.36		955.37	0.000098	1.43	4840.61	1489.85	0.09
1	880.66	500-year	4520.00	946.20	957.25		957.26	0.000118	1.81	7839.67	1674.17	0.10
1	880.65	100-year	2760.00	946.20	956.92		956.93	0.000042	1.08	6236.77	1026.50	0.06
1	880.65	FW	2760.00	946.20	956.95		956.95	0.000041	1.07	6262.89	1026.50	0.06
1	880.65	10-year	1220.00	946.20	954.51		954.52	0.000035	0.82	3770.51	1000.97	0.05
1	880.65	50-year	2210.00	946.20	955.35		955.36	0.000066	1.20	4625.34	1026.50	0.07
1	880.65	500-year	4520.00	946.20	957.24		957.25	0.000096	1.67	6560.87	1026.50	0.09
1	880.64	100-year	2760.00	946.15	956.92		956.93	0.000047	1.16	5747.05	892.82	0.07
1	880.64	FW	2760.00	946.15	956.94		956.95	0.000047	1.15	5769.77	892.82	0.07
1	880.64	10-year	1220.00	946.15	954.51		954.52	0.000037	0.85	3597.72	892.82	0.06
1	880.64	50-year	2210.00	946.15	955.35		955.36	0.000070	1.26	4344.77	892.82	0.08
1	880.64	500-year	4520.00	946.15	957.23		957.25	0.000109	1.80	6024.75	892.82	0.10
1	880.63	100-year	2760.00	946.10	956.91		956.92	0.000066	1.33	5270.33	873.10	0.08
1	880.63	FW	2760.00	946.10	956.93		956.95	0.000065	1.32	5292.60	873.10	0.08
1	880.63	10-year	1220.00	946.10	954.50		954.51	0.000055	0.99	3173.76	859.29	0.07
1	880.63	50-year	2210.00	946.10	955.33		955.35	0.000102	1.46	3894.28	873.10	0.09
1	880.63	500-year	4520.00	946.10	957.21		957.23	0.000153	2.06	5529.48	873.10	0.12
1	880.62	100-year	2760.00	945.00	956.90		956.92	0.000050	1.19	5277.20	836.86	0.07
1	880.62	FW	2760.00	945.00	956.93		956.94	0.000050	1.19	5298.60	836.86	0.07
1	880.62	10-year	1220.00	945.00	954.50		954.51	0.000037	0.85	3265.86	836.86	0.06
1	880.62	50-year	2210.00	945.00	955.33		955.34	0.000073	1.28	3957.04	836.86	0.08
1	880.62	500-year	4520.00	945.00	957.19		957.22	0.000119	1.87	5520.08	836.86	0.10
1	880.61	100-year	2760.00	945.00	956.90		956.91	0.000049	1.23	6256.40	1125.87	0.07
1	880.61	FW	2760.00	945.00	956.90		956.93	0.000107	1.81	3025.11	390.22	0.10
1	880.61	10-year	1220.00	945.00	954.50		954.50	0.000043	0.96	3553.72	1107.66	0.06
1	880.61	50-year	2210.00	945.00	955.32		955.33	0.000079	1.40	4475.51	1125.87	0.08
1	880.61	500-year	4520.00	945.00	957.19		957.21	0.000115	1.91	6577.72	1125.87	0.10
1	880.40	100-year	2760.00	944.50	956.89	949.71	956.90	0.000033	1.13	4306.16	882.72	0.06
1	880.40	FW	2760.00	944.50	956.89	949.71	956.91	0.000056	1.47	3086.20	574.00	0.07
1	880.40	10-year	1220.00	944.50	954.48	947.84	954.49	0.000047	1.16	2186.14	858.29	0.07
1	880.40	50-year	2210.00	944.50	955.30	949.12	955.31	0.000071	1.50	2899.92	882.72	0.08
1	880.40	500-year	4520.00	944.50	957.16	951.24	957.18	0.000075	1.72	4546.18	882.72	0.09
1	880.3		Bridge									
1	880.20	100-year	2760.00	944.50	956.88		956.89	0.000038	1.20	4031.55	831.41	0.06
1	880.20	FW	2760.00	944.50	956.88		956.90	0.000057	1.48	3080.31	574.00	0.07
1	880.20	10-year	1220.00	944.50	954.46		954.47	0.000054	1.24	2026.70	804.91	0.07
1	880.20	50-year	2210.00	944.50	955.27		955.29	0.000082	1.62	2692.99	831.41	0.09
1	880.20	500-year	4520.00	944.50	957.14		957.16	0.000086	1.84	4247.72	831.41	0.09
1	880.1	100-year	2760.00	944.50	951.56		952.03	0.001509	4.65	716.43	274.67	0.34
1	880.1	FW	2760.00	944.50	951.64		952.32	0.001083	4.10	804.02	239.08	0.29
1	880.1	10-year	1220.00	944.50	950.10		950.35	0.001396	3.70	379.67	223.41	0.31
1	880.1	50-year	2210.00	944.50	951.11		951.50	0.001465	4.35	606.61	253.90	0.33
1	880.1	500-year	4520.00	944.50	952.91		953.34	0.001482	5.28	1236.53	532.09	0.34
1	879	100-year	2760.00	942.90	951.06		951.26	0.001111	4.22	1544.25	738.28	0.32
1	879	FW	2760.00	942.90	951.64		951.78	0.000716	3.63	1729.22	584.48	0.26
1	879	10-year	1220.00	942.90	949.50		949.65	0.001108	3.33	623.26	464.96	0.30
1	879	50-year	2210.00	942.90	950.55		950.75	0.001160	4.03	1190.97	639.51	0.32
1	879	500-year	4520.00	942.90	952.48		952.66	0.000898	4.44	2636.13	790.45	0.30
1	878	100-year	2760.00	942.40	950.74		950.77	0.000290	2.05	3436.92	1477.90	0.16
1	878	FW	2760.00	942.40	951.27		951.33	0.000363	2.46	2550.25	761.37	0.19
1	878	10-year	1220.00	942.40	948.91		948.96	0.000560	2.08	927.80	775.94	0.21
1	878	50-year	2210.00	942.40	950.15		950.19	0.000361	2.10	2575.07	1440.45	0.18
1	878	500-year	4520.00	942.40	952.26		952.28	0.000213	2.11	5798.14	1664.47	0.15
1	877.5	100-year	2760.00	941.80	950.61		950.64	0.000205	2.30	4393.79	1523.72	0.15
1	877.5	FW	2760.00	941.80	951.01		951.10	0.000442	3.49	2448.41	629.00	0.22
1	877.5	10-year	1220.00	941.80	948.67		948.72	0.000323	2.38	1654.16	1251.61	0.17
1	877.5	50-year	2210.00	941.80	950.00		950.03	0.000235	2.33	3471.15	1467.12	0.15
1	877.5	500-year	4520.00	941.80	952.16		952.18	0.000170	2.37	6857.20	1649.60	0.14



HEC-RAS Plan: FEMA Ex River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	877.2	100-year	3990.00	941.30	950.37		950.46	0.000671	3.91	2864.40	1131.03	0.26
1	877.2	FW	3990.00	941.30	950.78		950.86	0.000564	3.72	2701.82	767.71	0.24
1	877.2	10-year	1770.00	941.30	948.37		948.46	0.000776	3.35	1101.41	741.44	0.27
1	877.2	50-year	3190.00	941.30	949.74		949.83	0.000700	3.74	2217.87	931.22	0.26
1	877.2	500-year	6540.00	941.30	951.95		952.04	0.000579	4.16	4885.06	1429.74	0.25
1	877	100-year	3990.00	940.90	949.40		949.82	0.001930	6.37	1581.01	552.50	0.44
1	877	FW	3990.00	940.90	949.55		950.21	0.002523	7.39	1063.15	331.18	0.51
1	877	10-year	1770.00	940.90	947.19		947.67	0.002831	5.84	524.97	375.36	0.50
1	877	50-year	3190.00	940.90	948.72		949.15	0.002126	6.21	1218.53	509.33	0.45
1	877	500-year	6540.00	940.90	951.03		951.47	0.001735	7.02	2578.32	663.71	0.43
1	876.5	100-year	3990.00	940.00	948.74		949.03	0.001079	4.76	1512.61	427.09	0.30
1	876.5	FW	3990.00	940.00	948.87		949.22	0.001184	5.04	1205.05	283.81	0.31
1	876.5	10-year	1770.00	940.00	946.76		946.90	0.000683	3.14	782.92	292.43	0.22
1	876.5	50-year	3190.00	940.00	948.10		948.35	0.000980	4.29	1250.03	390.70	0.28
1	876.5	500-year	6540.00	940.00	950.26		950.66	0.001307	5.88	2203.97	472.57	0.34
1	876.2	100-year	3990.00	941.00	948.08		948.37	0.002260	6.11	1640.37	619.81	0.41
1	876.2	FW	3990.00	941.00	948.34		948.57	0.001705	5.43	1521.83	359.93	0.36
1	876.2	10-year	1770.00	941.00	946.09		946.37	0.002611	5.22	733.41	373.98	0.42
1	876.2	50-year	3190.00	941.00	947.49		947.75	0.002124	5.57	1313.54	496.93	0.39
1	876.2	500-year	6540.00	941.00	949.77		949.99	0.001550	5.86	2843.32	792.13	0.35
1	876.1	100-year	3990.00	941.00	948.11		948.23	0.000937	3.93	2280.44	720.72	0.27
1	876.1	FW	3990.00	941.00	948.37		948.46	0.000684	3.44	2244.30	503.92	0.23
1	876.1	10-year	1770.00	941.00	946.13		946.21	0.000950	3.12	1123.45	481.61	0.26
1	876.1	50-year	3190.00	941.00	947.49		947.61	0.001005	3.81	1854.65	651.15	0.27
1	876.1	500-year	6540.00	941.00	949.77		949.89	0.000782	4.17	3603.40	860.99	0.26
1	876	100-year	3990.00	940.00	947.63		947.77	0.000926	3.88	2371.31	793.97	0.27
1	876	FW	3990.00	940.00	947.87		948.05	0.001010	4.15	1789.90	382.04	0.28
1	876	10-year	1770.00	940.00	945.56		945.69	0.001121	3.30	1037.72	497.56	0.28
1	876	50-year	3190.00	940.00	946.96		947.11	0.001021	3.79	1858.33	697.48	0.28
1	876	500-year	6540.00	940.00	949.40		949.53	0.000701	3.97	3840.05	847.50	0.24
1	875.9	100-year	3990.00	939.00	946.94		947.07	0.000973	4.42	2301.51	480.49	0.28
1	875.9	FW	3990.00	939.00	947.04		947.23	0.001213	4.98	1890.86	361.19	0.31
1	875.9	10-year	1770.00	939.00	944.80		944.90	0.000956	3.53	1291.35	462.24	0.26
1	875.9	50-year	3190.00	939.00	946.24		946.36	0.000976	4.16	1967.83	475.03	0.28
1	875.9	500-year	6540.00	939.00	948.76		948.92	0.001012	5.19	3198.61	502.84	0.30
1	875.8	100-year	3990.00	938.50	945.36		946.19	0.004156	7.98	795.20	217.64	0.57
1	875.8	FW	3990.00	938.50	945.35		946.21	0.004296	8.10	740.14	180.86	0.58
1	875.8	10-year	1770.00	938.50	943.78		944.17	0.002656	5.24	474.17	187.97	0.43
1	875.8	50-year	3190.00	938.50	944.81		945.51	0.003858	7.22	677.80	207.82	0.54
1	875.8	500-year	6540.00	938.50	946.73		947.95	0.004961	9.97	1106.22	231.58	0.64
1	874	100-year	3990.00	937.90	944.75		944.85	0.000651	3.78	2031.47	573.38	0.26
1	874	FW	3990.00	937.90	944.75		944.85	0.000651	3.78	2031.47	573.38	0.26
1	874	10-year	1770.00	937.90	942.43		942.58	0.001310	4.02	843.00	454.63	0.34
1	874	50-year	3190.00	937.90	943.97		944.08	0.000783	3.82	1606.89	522.44	0.28
1	874	500-year	6540.00	937.90	946.49		946.60	0.000535	4.01	3096.20	631.02	0.24
1	873.9	100-year	3990.00	936.90	942.56	942.56	944.40	0.009241	12.29	457.55	144.34	0.94
1	873.9	FW	3990.00	936.90	942.56	942.56	944.40	0.009241	12.29	457.55	144.34	0.94
1	873.9	10-year	1770.00	936.90	940.85	940.85	942.01	0.008711	9.23	245.48	111.07	0.85
1	873.9	50-year	3190.00	936.90	941.97	941.97	943.60	0.009384	11.44	377.02	125.85	0.93
1	873.9	500-year	6540.00	936.90	944.13	944.13	946.17	0.007975	13.56	705.44	162.49	0.91
1	873	100-year	3990.00	930.40	939.37	935.12	939.42	0.000190	1.89	2277.53	475.79	0.14
1	873	FW	3990.00	930.40	939.50	935.12	939.55	0.000176	1.84	2339.65	479.98	0.13
1	873	10-year	1770.00	930.40	936.56	934.35	936.60	0.000366	1.68	1067.77	385.25	0.17
1	873	50-year	3190.00	930.40	938.35	934.85	938.40	0.000239	1.86	1808.98	442.92	0.15
1	873	500-year	6540.00	930.40	943.35	935.77	943.39	0.000079	1.72	4440.56	618.59	0.10

HEC-RAS HEC-RAS 6.1.0 September 2021  
U.S. Army Corps of Engineers  
Hydrologic Engineering Center  
609 Second Street  
Davis, California

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X      X  XXXXXX   XXXX      XXXX      XX      XXXX
X      X  X       X   X      X   X      X   X      X
X      X  X       X       X   X   X      X   X      X
XXXXXXXX XXXX     X       XXX  XXXX     XXXXXX     XXXX
X      X  X       X       X   X   X   X      X       X
X      X  X       X   X      X   X      X   X      X
X      X  XXXXXX   XXXX     X   X      X   X      XXXXX
```

PROJECT DATA

Project Title: 20220861  
Project File : 20220861.prj  
Run Date and Time: 2/17/2023 10:26:49 AM

Project in English units

Project Description:

ROCKY FORK TRIB OF BIG WALNUT  
ROCKY FORK SECTIONS 850 THRU 891.5

ROCKY FORK FIS RUN 5

PLAN DATA

Plan Title: Existing Conditions  
Plan File : j:\20220861\Reports\Floodplain\Modeling\20220861.p03

Geometry Title: Existing Condition  
Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g10

Flow Title : FEMA Flow Rates  
Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f02

Plan Description:

Sugar Run and Rocky Fork Models  
Re-coded Using 2011 1-ft Auditors

topo  
 Bridges modeled mostly from record plans  
 Flow Rates from FEMA for Rocky  
 Fork  
 Flow Rates from FEMA for Sugar Run  
 Uses X5 card from HEC-2 model at  
 Dublin Granville Road downstream section

Plan Summary Information:

Number of:	Cross Sections = 116	Multiple Openings = 0
	Culverts = 3	Inline Structures = 0
	Bridges = 5	Lateral Structures = 1

Computational Information

Water surface calculation tolerance	= 0.01
Critical depth calculation tolerance	= 0.01
Maximum number of iterations	= 20
Maximum difference tolerance	= 0.3
Flow tolerance factor	= 0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

Encroachment Data

Equal Conveyance	= True
Left Offset	= 0
Right Offset	= 0

River = Rocky Fork	Reach = 1	RS	Profile	Method	Value1	Value2
		887.50	FW	1	1486.15	1809.67
		881.9	FW	1	-108.94	115.32
		881.8	FW	1	-30	30
		881.7	FW	1	-30	30
		881.6	FW	1	-85	32
		881.5	FW	1	-40.41	250
		881.1	FW	1	-300	175
		880.66	FW	1	-300	133
		880.61	FW	1	-250	140.22
		880.40	FW	1	-44	530
		880.20	FW	1	-44	530
		880.1	FW	1	-146.2	92.88
		879	FW	1	-334.48	250
		878	FW	1	-648.94	112.43
		877.5	FW	1	-468.31	160.69
		877.2	FW	1	-737.27	30.44

877	FW	1	-186.55	176.69
876.5	FW	1	-179.67	104.14
876.2	FW	1	-258.19	225
876.1	FW	1	-188.92	315
876	FW	1	-32.04	350
875.9	FW	1	-174.57	186.62
875.8	FW	1	-55.09	125.77

FLOW DATA

Flow Title: FEMA Flow Rates

Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f02

Flow Data (cfs)

River	Reach	RS	100-year	FW
10-year	50-year	500-year		
Rocky Fork	1	887.50	2760	2760
1220	2210	4520		
Rocky Fork	1	877.2	3990	3990
1770	3190	6540		
Sugar Run	1	3.553	1050	1050
766	910	1280		
Sugar Run	1	2.417	1620	1620
954	1400	1990		
Sugar Run	1	2.061	2240	2240
960	1170	3700		
Sugar Run	1	0.857	1580	1580
883	1433	1902		
Sugar Run	1	0.838	1398	1398
883	1324	1528		
Sugar Run	1	0.766	1580	1580
883	1433	1902		

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Rocky Fork	1	100-year	
Known WS = 939.37			
Rocky Fork	1	FW	

Known WS = 939.5  
 Rocky Fork 1 10-year  
 Known WS = 936.56  
 Rocky Fork 1 50-year  
 Known WS = 938.35  
 Rocky Fork 1 500-year  
 Known WS = 943.35  
 Sugar Run 1 100-year  
 Known WS = 950.37  
 Sugar Run 1 FW  
 Known WS = 950.37  
 Sugar Run 1 10-year  
 Known WS = 948.37  
 Sugar Run 1 50-year  
 Known WS = 949.74  
 Sugar Run 1 500-year  
 Known WS = 951.95

Changes in WS and EG

River	Reach	RS	Profile	Type	Value
Rocky Fork	1	880.20	500-year	Known WS	957.14
Rocky Fork	1	880.20	50-year	Known WS	955.27
Rocky Fork	1	880.20	10-year	Known WS	954.46
Rocky Fork	1	880.20	FW	Known WS	956.88
Rocky Fork	1	880.20	100-year	Known WS	956.88

GEOMETRY DATA

Geometry Title: Existing Condition  
 Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g10

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 887.50

INPUT

Description: FEMA Section AH - Upstream Tie-in Section  
 elevations dropped by  
 0.60 feet to convert from 1929 datum to 1988 datum  
 center of

channel station 1650

Station Elevation Data num= 43  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

0	987.4	23	987.4	46	987.4	100	987.4	300	987.4
364	987.4	449	986.4	538	986.4	681	982.4	885	980.4
1085	978.4	1085	998.4	1151	998.4	1151	978.4	1223	975.4
1239	975.4	1291	969.4	1352	965.4	1460	964.2	1526	963.4
1619	963.4	1637	961.4	1644	957.9	1660	957.9	1667	961.4
1700	964.4	1751	967.4	1811	967.4	1826	967.4	1850	969
1965	976.4	2150	983.4	2356	984.4	2519	985.4	2640	983.4
2730	983.4	2902	987.4	3143	993.4	3314	995.4	3396	993.4
3579	993.4	3761	995.4	3965	997.4				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1352	.055	1526	.035	1700	.055	1850	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1352	1700		132.72	132.72		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 886.69

INPUT

Description: upstream side of central college

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18	18		42.9	42.9		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-440.99	-33.98	969.18	T
33.98	431.38	969.43	T

BRIDGE

RIVER: Rocky Fork

REACH: 1 RS: 886.6

INPUT

Description: central college road bridge at 30° skew, distances adjusted by hand to account for skew. Data taken from record plan and converted from 1929 datum to 1988 datum by lowering elevations by 0.60-feet

Distance from Upstream XS = 1  
 Deck/Roadway Width = 40.9  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 27

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-440.99	974		-402.95	973		-370.77	972	
-330.05	971		-245.13	969.84		-195.13	969.38	
-145.13	969.22		-95.13	969.18		-45.13	969.55	
-32.98	969.56		-32.98	969.56	968.06	-20.13	969.56	968.06
0	969.57	968.06	4.87	969.57	968.06	29.87	969.58	968.06
32.98	969.58	968.06	32.98	969.58		54.87	969.59	
104.87	969.43		154.87	969.47		204.87	969.93	
254.87	970.67		277.87	970.95		304.87	971.27	
338.55	972		393.01	973		431.38	974	

Upstream Bridge Cross Section Data

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta: Left Right Coeff Contr. Expan.  
 -18 18 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-440.99	-33.98	969.18	T
33.98	431.38	969.43	T

Downstream Deck/Roadway Coordinates

num= 27

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-440.99	974		-402.95	973		-370.77	972	
-330.05	971		-245.13	969.84		-195.13	969.38	
-145.13	969.22		-95.13	969.18		-45.13	969.55	
-32.98	969.56		-32.98	969.56	968.06	-20.13	969.56	968.06

0	969.57	968.06	4.87	969.57	968.06	29.87	969.58	968.06
32.98	969.58	968.06	32.98	969.58		54.87	969.59	
104.87	969.43		154.87	969.47		204.87	969.93	
254.87	970.67		277.87	970.95		304.87	971.27	
338.55	972		393.01	973		431.38	974	

Downstream Bridge Cross Section Data

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta: Left Right Coeff Contr. Expan.

-18	18	.1	.3
-----	----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-440.99	-33.48	969.18	T
33.48	431.38	969.43	T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Abutments = 2

Abutment Data

Upstream num= 3

Sta	Elev	Sta	Elev	Sta	Elev
-32.98	966.5	-17.98	959	-16.78	958.4

Downstream num= 3

Sta	Elev	Sta	Elev	Sta	Elev
-32.98	966.5	-17.98	959	-16.78	958.4

Abutment Data

Upstream num= 2

Sta	Elev	Sta	Elev
17.98	959	32.98	966.5

Downstream num= 2



Sta Elev Sta Elev  
17.98 959 32.98 966.5

Number of Piers = 2

Pier Data

Pier Station Upstream= -11.58 Downstream= -11.58  
Upstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5  
Downstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5

Pier Data

Pier Station Upstream= 11.58 Downstream= 11.58  
Upstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5  
Downstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Momentum Cd = 1.2

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =

Submerged Inlet + Outlet Cd = .8

Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum

Do not add Weight component to Momentum

Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end

Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 886.51

INPUT

Description: downstream side of central college road bridge

Station Elevation Data num= 27									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18	18		75 103.76	132		.1	.3

Ineffective Flow num= 2				
Sta L	Sta R	Elev	Permanent	
-440.99	-33.48	969.18	T	
33.48	431.38	969.43	T	

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 886.4

INPUT

Description:

Station Elevation Data num= 25									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-344.42	970	-331.77	969	-312.17	968	-287.05	967	-245.05	966
-233.16	965	-161.52	964	-141.31	963.8	-64.59	963.8	-56.45	964
-39.8	964.4	-23.41	964	-17.64	963	-14.04	962	-10.45	961
12.46	961	14.04	962	15.61	963	17.33	964	20.44	965
22.66	966	25.34	967	28.03	968	30.65	969	32.62	970

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-344.42	.1	-23.41	.04	17.33	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.41	17.33		330 320.04	300		.1	.3

Ineffective Flow num= 1			
Sta L	Sta R	Elev	Permanent
-344.42	-54.16	969.18	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 886.3

INPUT

Description:

Station Elevation Data		num= 22		Sta		Elev		Sta		Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-62.31	969	-53.57	968	-44.83	967	-32.22	966	-22.44	965		
-19.34	964	-17.68	963	-15.31	961	-12	960.3	12	960.3		
21.51	961	24.47	962	27.39	963	59.45	964	64.86	965		
68.06	966	72.34	967	81.44	967	85.12	965	196.94	965		
201.35	968	203.96	969								

Manning's n Values		num= 4		Sta		n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-62.31	.1	-17.68	.04	27.39	.1	64.86	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.68	27.39		555	514.42		.1	.3
Ineffective Flow			num= 1					
	Sta L	Sta R	Elev	Permanent				
	72.34	203.96	967	T				

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 886.2

INPUT

Description:

Station Elevation Data		num= 20		Sta		Elev		Sta		Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-33.39	968	-30.95	967	-28.52	966	-26.02	965	-17.83	962		
-15.08	961	-12	960.05	12	960.05	14.23	961	25.33	962		
52.11	963	65.51	963.2	82.03	963	148.25	962.2	205.53	963		
217.61	964	225.19	965	231.35	966	237.47	967	244.46	968		

Manning's n Values		num= 3		Sta		n Val	
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-33.39	.1	-17.83	.04	25.33	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.83	25.33		457	445.2		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 886.1

INPUT

Description:

Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-280.14	967	-267.67	966	-248.37	965	-215.92	964.3	-181.12	965
-159.77	966	-146.94	967	-134.32	968	-121.67	969	-110.01	970
-100.71	971	-76.43	972	-69.91	972	-40.54	971	-35.53	970
-33.54	969	-31.89	968	-30.49	967	-29.09	966	-27.7	965
-26.31	964	-24.6	963	-22.45	962	-18.94	961	-15.98	960
-13.02	959	-10	958.5	10	958.5	13.29	959	18.49	960
23.64	961	31.14	961.1	39.58	961	49.98	960	55.6	959.6
61.12	960	72.5	961	118.83	962	136.63	962	163.79	961.8
191.72	962	220.78	962	258.22	963	264.08	964	266.72	965
269.22	966	271.75	967						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-280.14	.1	-18.94	.04	23.64	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-18.94	23.64	472	828.74	815	.1	.3
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CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 886

INPUT

Description: Lettered Section AG

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-587.27	967	-577.13	966	-567.83	965	-558.25	964	-543.42	963
-497.74	962	-452.62	961.5	-338.33	961	-274.52	960.2	-138.11	960
-118.98	959	-96.73	960	-70.39	960.2	-43.11	960	-38.93	959
-14.89	958	-11.11	957	-10	956.2	10	956.2	11.58	957
13.1	958	20.72	963	22.24	964	24.69	965	29.19	966
32.45	967								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-587.27	.1	-14.89	.04	13.1	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-14.89	13.1	625	607.51	445	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 885.2

INPUT

Description:

Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-153.35	967	-144.68	966	-140	965	-136.44	964	-133.25	963
-128.77	962	-122.34	961	-113.7	960	-100.08	959	-73.1	958.1
-56.14	958	-46.99	957.7	-37.54	958	-19.38	959	-15.64	959
-14.6	958	-13.57	957	-12.52	956	-11.37	955	-10	954.2
9	954.2	10.89	955	14.14	956	17.42	957	32.16	957.2
44.54	957	57.09	956.7	68.41	957	73.88	958	80.86	959
90.79	959.1	100.23	959	116.57	959	135.35	960	155.23	960
257.23	960	263.82	961	269.8	962	276.11	963	282.07	964
313.5	965	376.74	966	396.53	967				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-153.35	.1	-13.57	.04	17.42	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.57	17.42		345	487.99		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 885.1

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-345.92	967	-263.22	966	-215.95	965	-207.49	964	-201.59	963
-196.59	962	-190.44	961	-180.65	960	-158.95	959	-60.28	958
-42.28	957	-29.18	957.2	-18.43	957	-15.3	956	-13.17	955
-11.05	954	-10	953.6	10	953.6	12.93	954	17.09	957
18.47	958	31.01	958.2	48.59	958	105.88	957.1	128.48	957
148.08	956.8	165.61	957	186.59	958	200.87	959	209.21	960
212.51	961	216.54	962	220.39	963	223.46	964	225.36	965
227.09	966	228.75	967						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-345.92	.1	-18.43	.04	18.47	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.43	18.47		405	521.15		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 884

INPUT

Description:

Station Elevation Data			num= 25						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-428.69	966	-416.85	965	-400.83	964	-386.56	963	-372.08	962
-360.55	961	-347.31	960	-309.23	959	-187.41	958	-162.7	957.8
-140.46	958	-68.96	958	-53.47	957.2	-17.61	957	-13.29	956
-11.44	955	-9.69	954	-8	953.3	15	953.3	16.68	954
17.59	955	22.35	960	26.46	964	27.64	965	28.97	966

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-428.69	.1	-17.61	.04	17.59	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.61	17.59		240	308.3		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 883.7

INPUT

Description:

Station Elevation Data			num= 49						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-236.31	966	-211.62	965	-195.16	964	-191.72	963	-188.55	962
-186	961	-184.13	960	-182.26	959	-180.43	958	-178.53	957
-176.47	956	-92.83	956	-89.94	957	-86.97	958	-82.9	959
-69.84	960	-62.58	960.5	-55.67	960	-51.31	959	-48.85	958
-46.69	957	-44.38	956	-36.09	955.8	-26.92	956	-22.39	956.1
-17.86	956	-15.64	955	-13.44	954	-11.3	953	-10.5	952.9
12	952.9	12.41	953	14.88	954	17.37	955	19.94	956
22.81	957	30.19	957.1	38.05	957	64.23	956.6	121.43	957
151.99	958	175.95	959	207.32	960	243.25	961	266.33	962
284.84	963	300.11	964	341.64	965	391.73	966		

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-236.31	.1	-17.86	.04	19.94	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.86	19.94		355	356.98		.1	.3



Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -598.15 .06 -39.29 .04 31.91 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -39.29 31.91 50.79 50.79 50.79 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -598.15 -40.47 962.7 T  
 40.39 376.91 962.7 T

BRIDGE

RIVER: Rocky Fork  
 REACH: 1 RS: 883.45

INPUT

Description: Warner Road Bridge  
 Built in 1980  
 Distance from Upstream XS = 6.7  
 Deck/Roadway Width = 36  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 15  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -590.54 966 -442.57 965 -283.47 964  
 -144.8 963 -97.75 962.7 -35 963.25  
 -35 963.25 960.25 31.91 963.7 960.7 31.91 963.7  
 65.65 964 177.58 965 281.85 966  
 338.74 967 368.29 968 389.57 969

Upstream Bridge Cross Section Data

Station Elevation Data num= 36  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -598.15 965 -351.18 964 -343.86 963 -299.15 962 -268.73 961  
 -241.58 960 -222.74 959 -178.89 959 -177.26 960 -144.68 961  
 -88.76 962 -74.4 962 -59.09 961 -39.29 960 -34.1 959  
 -34.06 958 -30.61 957 -26.06 956 -20.07 955 -16.39 954  
 -12.82 953 -10 952.5 15 952.5 16.74 953 18.71 954  
 21.43 955 25.19 956 28.37 957 31.54 958 31.91 961  
 33.1 961 106.05 961 130.35 962 167.39 963 356.56 964  
 376.91 965

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -598.15 .06 -39.29 .04 31.91 .06

Bank Sta: Left Right Coeff Contr. Expan.  
 -39.29 31.91 .3 .5



Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -598.15 -40.47 962.7 T  
 40.39 376.91 962.7 T

Downstream Deck/Roadway Coordinates

num= 15  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -590.54 966 -442.57 965 -283.47 964  
 -144.8 963 -97.75 962.7 -35 963.25  
 -35 963.25 960.25 31.91 963.7 960.7 31.91 963.7  
 65.65 964 177.58 965 281.85 966  
 338.74 967 368.29 968 389.57 969

Downstream Bridge Cross Section Data

Station Elevation Data num= 27  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -320.1 964 -300.87 963 -273.59 962 -252.24 961 -229.92 960  
 -183.24 959 -161.29 958 -34.85 958 -30.98 957 -26.41 956  
 -21.39 955 -18.52 954 -16.8 953 -15 952.5 12 952.5  
 14.14 953 15.5 954 17.37 955 21.96 956 26.19 957  
 30.61 958 30.8 959 30.92 960 107.4 961 118.7 962  
 135.16 963 161.61 964

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -320.1 .1 -34.85 .04 30.61 .1

Bank Sta: Left Right Coeff Contr. Expan.  
 -34.85 30.61 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -320.1 -38.79 962.7 T  
 35.41 161.61 962.7 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

- Add Friction component to Momentum
- Do not add Weight component to Momentum
- Class B flow critical depth computations use critical depth inside the bridge at the upstream end
- Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.4

INPUT

Description: downstream side of Warner Road Bridge built in 1980

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-320.1	964	-300.87	963	-273.59	962	-252.24	961	-229.92	960
-183.24	959	-161.29	958	-34.85	958	-30.98	957	-26.41	956
-21.39	955	-18.52	954	-16.8	953	-15	952.5	12	952.5
14.14	953	15.5	954	17.37	955	21.96	956	26.19	957
30.61	958	30.8	959	30.92	960	107.4	961	118.7	962
135.16	963	161.61	964						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-320.1	.1	-34.85	.04	30.61	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-34.85	30.61	102.12	102.12	102.12	.3	.5
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Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-320.1	-38.79	962.7	T
35.41	161.61	962.7	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.3

INPUT

Description:

Station Elevation Data num= 33

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-190.42	965	-187.7	964	-185.12	963	-181.78	962	-178.2	961
-175.22	960	-172.74	959	-170.17	958	-165.44	957	-156.17	956
-140.97	955.9	-105.59	956	-54.52	956.5	-27.63	956	-19.64	955

-16.72	954	-14.18	953	-10	952.4	10	952.4	12.8	953
14.77	954	16.76	955	19.23	956	24.05	957	51.12	958
74.51	959	81.61	960	86.24	961	90.78	962	96.5	963
128.62	963	152.23	964	158.09	965				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-190.42	.1	-19.64	.04	16.76	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-19.64	16.76	249	261.04	250	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-190.42	-160.13	962.7	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.2

INPUT

Description:

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-113.27	964	-109.52	963	-106.02	962	-102.92	961	-100.23	960
-97.51	959	-94.82	958	-91.5	957	-76.54	956	-50.25	956.4
-20.97	956	-19.56	955	-16.74	953	-10	952.2	10	952.2
14.9	953	17.04	954	19.33	955	22.71	956	164.91	956
182.88	957	193.27	958	200.28	959	207.63	960	218.48	961
223.19	962	228.26	963	233.43	964				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-113.27	.1	-20.97	.04	22.71	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-20.97	22.71	315	419.74	383	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.1

INPUT

Description:

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-187.63	962	-183.33	961	-177.86	960	-172.99	959	-167.32	958

-161.41	957	-153.84	956	-139.64	955	-125.39	954.9	-108.16	955
-76.33	956	-71.28	956	-19.32	955	-17.09	954	-14.96	953
-12.93	952	-10	951.8	10	951.8	14.88	952	17.43	953
19.97	954	22.54	955	26.5	956	51.14	957	82.86	958
97.8	959	105.33	960	112.17	961	149	962		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-187.63	.1	-19.32	.04	22.54	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-19.32	22.54		440 425.44	331		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883

INPUT

Description:

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-73.43	963	-59.34	962	-45.63	961	-39.62	960	-35.64	959
-33.69	958	-30.44	957	-27.38	956	-24.36	955	-21.69	954
-19.82	953	-18.15	952	-10	951.4	12	951.4	14.64	952
18.19	955	39.92	955.5	64.91	955	88.16	954.8	115.42	955
142.68	955	166.65	956	267.37	957	273.03	958	283.18	960
289.52	961	299.49	962						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-73.43	.1	-24.36	.04	18.19	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-24.36	18.19		500 598.03	506		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 882

INPUT

Description:

Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-185.06	961	-139.86	960	-90.05	959	-61.22	958	-52.76	957
-46.48	956	-41.45	955	-31.22	954	-13.7	953	-11.95	952
-8	951.1	10	951.1	15.29	952	30.48	953	49.3	954

54.89	954.1	59.58	954	66.94	954	140.57	955	185.31	956
207.34	957	222.68	958	234.97	959	245.76	960	256.15	961
266.07	962	275.05	963	283.8	964	298.41	965	319.3	965
329.94	964	337.4	963	344.3	962	351.2	961	358.04	960
364.12	959	373.08	958	384.99	957	409.02	956	591.66	956
617.95	957	630.72	958	634.72	959	642.73	961		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-185.06	.1	-13.7	.04	30.48	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.7	30.48		317	391.59		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.9

INPUT

Description:

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-167.88	960	-142.77	959	-136.51	958	-129.97	957	-126.13	956
-121.72	955	-74.1	954.2	-45.69	954	-33.91	953	-28.16	952
-23.01	951	-12.97	950	-9	949.5	10	949.5	15.65	950
17.38	951	19.1	952	21.26	953	30.23	954	109.3	954
205.13	955	295.04	955	629.86	955	653.01	956	666.88	957
681.96	958	685.63	959	689.46	960				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-167.88	.1	-45.69	.04	30.23	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-45.69	30.23		109.39	109.39		.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-167.88	-108.94	960	T
115.32	689.46	960	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.8

INPUT

Description: upstream side of SR-161 Bypass Bridge

Station Elevation Data				num=	19					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-44.01	960	-33.06	955	-30.9	954	-28.76	953	-26.67	952	
-24.71	951	-23.08	950	-15	949.4	15	949.4	22	950	
24.51	951	26.66	952	28.64	953	30.68	954	32.73	955	
36.89	957	38.97	958	41.08	959	44.98	960			

Manning's n Values				num=	3	
Sta	n Val	Sta	n Val	Sta	n Val	
-44.01	.035	-23.08	.035	22	.035	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.08	22		130.97	130.97		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 881.7

INPUT

Description: downstream side of SR-161 Bypass Bridge

Station Elevation Data				num=	17					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-44.26	960	-42.36	959	-40.45	958	-38.51	957	-36.58	956	
-34.54	955	-32.55	954	-30.63	953	-28.81	952	-27.57	951	
-26.45	950	-15	949.2	0	949.2	15	949.2	21.81	950	
39.9	959	43.97	960							

Manning's n Values				num=	3	
Sta	n Val	Sta	n Val	Sta	n Val	
-44.26	.035	-26.45	.035	21.81	.035	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.45	21.81		229.13	229.13		.3	.5

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 881.6

INPUT

Description:

Station Elevation Data				num=	38					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-618.83	960	-583.51	959	-558.42	958	-531.36	957	-492.3	956	
-350.51	955.5	-251.83	956	-244.7	957	-233.92	958	-208.63	958	
-122.4	959	-112.39	959	-101.91	958	-95.35	957	-89.57	956	
-84.97	955	-79.61	954	-71.14	953	-59.21	952	-17.13	951	

-12.11	949	12.83	949	16.53	950	20.29	951	24.11	952
27.93	953	34.25	954	47.11	955	55.79	956	65.83	957
75.69	958	86.76	959	96.94	960	217.07	960	232.82	959
272.02	958.5	280.28	959	284.55	960				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-618.83	.1	-17.13	.04	20.29	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-17.13	20.29	324.74	324.74	324.74	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-618.83	-112.39	959	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.5

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1095.46	959	-1076.94	958	-1067.13	957	-1042.48	956	-950.75	955
-903.01	954	-896.42	953	-894	952.7	-131	952.7	-128.45	953
-122.43	954	-56.17	955	-40.41	955.1	-27.35	955	-23.6	954
-21.83	953	-14.89	949	-13.09	948	11.92	948	21.66	951
26.41	952	29.56	953	40.81	953.2	52.38	953	58.34	952
111.82	952	119.12	953	133.2	953	137.12	952	327.38	952
335.26	953	340.53	954	344.36	955	347.87	956	351.58	957
355.32	958	359.28	959						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-1095.46	.1	-21.83	.04	29.56	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-21.83	29.56	871.8	871.8	871.8	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-1095.46	-40.41	955.1	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.1

INPUT

Description:

Station Elevation Data			num= 39								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-779.61	958	-730	957	-678.19	956	-399.29	955	-364.7	954		
-326.38	953	-281.65	952	-246.84	951	-217.54	950	-207.39	950		
-189.2	951	-147.68	951.2	-109.76	951	-94.67	950	-80.78	949.6		
-65.67	950	-52.1	950	-21.1	949	-17.57	948	-13.57	947		
-10	946.5	10	946.5	17.3	947	25.34	952	34	952.3		
44.34	952	49.94	951	62.45	951	66.9	952	190.26	952		
194.05	951	267.44	951	271.18	952	276.69	953	282.12	954		
286.32	955	290.06	956	293.43	957	299.73	958				

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-779.61	.1	-21.1	.04	25.34	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.1	25.34		729.81	729.81		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 880.66

INPUT

Description:

Station Elevation Data			num= 37								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1178.48	960	-1151.16	959	-1065.71	958	-1001.87	957	-923.25	956		
-850.46	955	-803.82	954	-793.63	953	-783.44	952	-750.05	952		
-739.34	953	-144.84	953	-125.23	950	-26.55	950	-23.61	949		
-19.78	947	-12	946.2	12	946.2	25.17	947	31.88	949		
55.18	950	121.78	951	127.04	952	136.95	952	197.97	951		
326.39	951	343.12	952	367.78	952	371.51	951	455.62	951		
468.83	952	501.12	953	537.98	954	600.17	955	637.67	956		
653.63	957	666.01	958								

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-1178.48	.1	-26.55	.04	55.18	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.55	55.18		75.45	75.45		.1	.3

CROSS SECTION

RIVER: Rocky Fork



REACH: 1

RS: 880.65

INPUT

Description:

Station Elevation Data			num= 44								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-559.2	955	-508.47	954	-474.12	953.2	-411.29	953	-404.86	952		
-388.52	951	-344.16	950	-331.58	950	-293.22	949.9	-279.51	950		
-260.22	949.9	-241.55	950	-206	950.2	-165.97	950	-136.56	949		
-114.17	948.9	-87.83	949	-63.95	949.3	-39.4	949	-21.79	948		
-17.59	947	-11.2	946.2	0	946.2	14.15	946.2	20.5	947		
29.69	948	37.86	949	40.82	950	114.17	951	121.08	952		
147.32	952	158.96	951	219.81	950.8	267.25	951	290.07	952		
358.32	953	368.42	953	373.84	952	377.45	951	453.08	951		
460.6	952	464.21	953	465.49	954	467.3	955				

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-559.2	.08	-39.4	.04	40.82	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-39.4	40.82		51.92	51.92		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.64

INPUT

Description:

Station Elevation Data			num= 38								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-430.08	954	-414.62	953	-399.77	952	-377.03	951	-278.2	950		
-233.24	950	-185.48	950.2	-146.62	950	-129.86	949	-110.3	948.5		
-79.23	949	-61.39	949.2	-46	949	-26.06	948	-19.2	947		
-4.99	946.15	0	946.15	14.76	946.15	19.62	947	22.31	948		
24.94	949	32.12	950	109.01	951	116.29	952	130.06	953		
140.05	953	148.33	952	169.09	951	296.81	951	349.88	952		
359.01	953	376.01	953	379.29	952	381.58	951	452.64	951		
457.66	952	460.94	953	462.74	954						

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-430.08	.08	-46	.04	24.94	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-46	24.94		95	124.89		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.63

INPUT

Description:

Station Elevation Data										num=	41
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-357.04	955	-330.55	954	-318.27	953	-296.03	952	-285.35	951		
-263.63	950	-199.92	949.9	-98.18	950	-48.32	950.2	-28.46	950		
-21.12	949	-18.26	948	-16.34	947	-6.3	946.1	0	946.1		
7.74	946.1	13.49	947	32.67	948	51.93	949	55.96	949.1		
61.05	949	65.7	948.9	70.78	949	79.19	950	85.68	951		
91.62	951.1	97.86	951	148.02	951	153.27	952	165.36	952		
182.98	952	394.89	952	399.15	953	415.96	953	419.3	952		
422.62	951	503.5	951	511.19	952	513.39	953	514.73	954		
516.06	955										

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-357.04	.1	-28.46	.04	55.96	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-28.46	55.96		79.82	79.82		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.62

INPUT

Description:

Station Elevation Data										num=	34
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-309.83	954	-293.45	953	-280.01	952	-269.9	951	-249.43	950		
-51.03	950	-46.96	950.1	-42.42	950	-32.51	949	-22.79	948		
-18.95	947	-15.6	946	-12.37	945	0	945	10.32	945		
13.87	946	18.74	947	65.95	948	70.76	949	74.74	950		
81.33	951	96.86	950	132.38	950	137.42	951	142.13	952		
152.41	952	386.69	952	397.62	952.4	409.24	952	412.25	951		
503.25	951	508.62	952	523.09	953	527.03	954				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-309.83	.1	-42.42	.04	74.74	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-42.42	74.74		104.09	104.09		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.61

INPUT

Description:

Station Elevation Data			num= 33						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-315.65	955	-284.82	954	-270.47	953	-260.95	952	-240.39	951
-205.95	950	-127.85	949	-102.05	948.9	-78.09	949	-60.06	950
-53.1	950.1	-46.39	950	-40.08	949	-29.76	948	-14.67	947
-12.54	946	-10.49	945	14.28	945	23.53	946	32.98	947
38.05	948	43.15	949	47.9	950	61.2	950.1	76.87	950
103.4	950	130.26	951	135.43	952	140.22	952.2	770.79	952.2
784.52	953	804.96	954	810.22	955				

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-315.65	.1	-40.08	.04	43.15	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-40.08	43.15		293	288.26		.1	.3

Ineffective Flow			num= 1
Sta L	Sta R	Elev	Permanent
300	810.22	952.4	T

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.40

INPUT

Description:

Station Elevation Data			num= 12						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70.23	955	-44	951.24	-17.5	945	0	944.5	17.5	945
44	950.36	110.99	951.5	606.49	951.5	648.32	952	731.45	953
772.43	954	812.49	955						

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-70.23	.04	-17.5	.04	17.5	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.5	17.5		50	50		.3	.5

Ineffective Flow			num= 2

Sta L	Sta R	Elev	Permanent
-70.23	-45.5	952.4	T
45.5	812.49	952.4	T

BRIDGE

RIVER: Rocky Fork

REACH: 1

RS: 880.3

INPUT

Description: Old Dublin Granville Bridge over Rocky Fork

FRA-CR

546-12.90

Coded using 2020 record plans

Distance from Upstream XS = 1.5

Deck/Roadway Width = 46.167

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 28

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-100	955.4		-65.37	955.4		-45.37	955.12	
-44	955.1		-44	955.1	953.28	-25.37	954.85	953.03
0	954.71	952.89	14.63	954.61	952.79	34.63	954.38	952.56
44	954.35	952.53	44	954.35		60.63	954.18	
84.63	954		114.63	953.83		134.63	953.66	
215.8	953		221.37	952.8		251.41	952.6	
321.01	952.4		388.74	952.4		438.5	952.6	
490.08	952.8		499.88	953		616.5	954	
685.76	955		737.54	956		778.8	957	
813.9	958							

Upstream Bridge Cross Section Data

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70.23	955	-44	951.24	-17.5	945	0	944.5	17.5	945
44	950.36	110.99	951.5	606.49	951.5	648.32	952	731.45	953
772.43	954	812.49	955						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70.23	.04	-17.5	.04	17.5	.04

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	-17.5	17.5		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-70.23	-45.5	952.4	T
45.5	812.49	952.4	T



Pier Data

Pier Station      Upstream=      17.5      Downstream=      17.5  
 Upstream      num=      4  
     Width   Elev   Width   Elev      Width   Elev      Width   Elev  
     1.333   940   1.333   950.6      3   950.6      3   953  
 Downstream      num=      4  
     Width   Elev   Width   Elev      Width   Elev      Width   Elev  
     1.333   940   1.333   950.6      3   950.6      3   953

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

    Energy  
     Momentum      Cd =      1.2  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
     Energy Only

Additional Bridge Parameters

    Add Friction component to Momentum  
     Do not add Weight component to Momentum  
     Class B flow critical depth computations use critical depth  
         inside the bridge at the upstream end  
     Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1      RS: 880.20

INPUT

Description:

Station Elevation Data      num=      11  
     Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev   Sta   Elev  
     -70.23   955   -44   951.24   -17.5   945   0   944.5   17.5   945  
     44   950.36   47.59   952   541.53   952   654.31   953   719.08   954  
     761.18   955

Manning's n Values      num=      3  
     Sta   n Val   Sta   n Val   Sta   n Val  
     -70.23   .04   -17.5   .04   17.5   .04

Bank Sta: Left   Right   Lengths: Left Channel   Right   Coeff Contr.   Expan.  
     -17.5   17.5      155   137.53   125      .3      .5

Ineffective Flow      num=      2  
     Sta L   Sta R   Elev   Permanent  
     -70.23   -45.5   952.4   T



-19.06 68.51 872.31 866.57 827.96 .1 .3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 878

INPUT

Description:

Station Elevation Data			num= 53								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1574.84	952	-1507.75	951	-1503.32	950	-1491.46	949	-1484.46	948.8		
-1473.57	949	-1462.91	949.2	-1452.47	949	-1437.35	948	-1433.8	945		
-1430.79	944	-1405.79	944	-1401.82	945	-1400.29	950	-1368.32	951		
-1347.44	952	-1330.13	953	-1307.93	954	-1300.12	953	-1296.42	952		
-1293.07	951	-1289.6	950	-1285.68	949	-1247.1	949	-1233.73	950		
-1227.12	951	-1220.86	952	-1174.61	952	-1166.8	951	-1155.19	950		
-1112.9	949.2	-876.43	949	-642.39	949	-197.51	948	-149.08	947.5		
-102.36	948	-47.38	948	-34.13	948.2	-20.04	948	-15.66	944		
-14	943.4	-12	942.4	12	942.4	14	943.4	15.27	944		
21.99	946	53.8	947	106.41	948	112.43	949	116.89	950		
122.21	951	131.04	952	147.7	953						

Manning's n Values			num= 5								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-1574.84	.1	-1452.47	.04	-1400.29	.1	-20.04	.035	106.41	.1		

Bank Sta:	Left	Right	Lengths:	Left	Channel	Right	Coeff	Contr.	Expan.
	-20.04	106.41		475	645.93	545		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 877.5

INPUT

Description:

Station Elevation Data			num= 52								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1246.42	952	-1174.4	951	-1127.21	950	-1064.03	949	-1019.11	948.5		
-975.15	949	-955.99	949	-943.78	948	-847.34	947	-842.2	946		
-834.38	945	-828.82	944	-825	943.7	-815	943.7	-810.8	944		
-809.37	945	-807.9	946	-806.37	947	-757.55	947	-719.28	948		
-610.85	948	-562.93	948.2	-517.35	948	-465.31	947.5	-408.26	948		
-314.37	948.5	-204.24	948	-189.64	947	-178.54	946.8	-166.5	947		
-150.58	947.5	-130.7	947	-117.88	946	-87.52	946.8	-76.35	946		
-72.23	946	-50.46	947	-34.67	947.5	-18.1	947	-13.46	944		
-8	941.8	0	941.8	12	941.8	20.93	944	22.97	945		



25.54	946	95.99	947	256.78	948	274.59	949	340.43	950
384.74	951	403.18	952						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-1246.42	.1	-847.34	.04	-806.37	.1	-18.1	.035	25.54	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-18.1	25.54	375	598.7	425	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 877.2

INPUT

Description:

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-974.17	952	-897.89	951	-842.94	950	-786.21	949	-762.45	948
-672.82	947	-668.64	946	-665.84	944	-660.03	943	-648.84	943
-634.19	943	-631.25	944	-627.1	947	-574.19	948	-547.43	949
-473.32	950	-459.9	950.5	-450.21	950	-444.51	949	-438.77	948
-339.35	948	-330.83	948	-124.42	947	-35.95	946	-21.2	946
-16.66	945	-11.76	941.3	0	943	15.98	943	20.05	944
24.81	945	28.94	946	73.23	947	86.02	948	106.46	949
161.86	950	253.81	950.2	349.26	951	465.67	952		

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-974.17	.1	-672.82	.035	-627.1	.1	-21.2	.035	28.94	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-21.2	28.94	570	567	589	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 877

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-297.25	952	-285.75	950	-280.08	949	-274.03	948	-199.04	947
-174.36	946	-156.29	946	-149.37	947	-102.75	947	-25.55	946
-22.82	945	-18.11	944	-15.44	943	-13.24	942	-11.5	940.9
11.5	940.9	15.46	942	17.78	943	20.71	944	25.23	945

37.6	946	53.77	947	73.52	948	103.03	949	112.2	950
121.71	950.4	126.26	950	156.83	949	164.95	948	176.32	946
217.81	945.5	265.25	946	270.46	947	287.88	948	298.24	949
322.21	950	372.02	951						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-297.25	.1	-25.55	.035	37.6	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-25.55	37.6	519	546.36	501	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.5

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-211.88	950	-208.56	949	-205.64	948	-201.54	947	-133.49	946
-125.28	946	-98.17	947	-89.77	947	-75.42	946	-55.82	945
-46.62	944	-37.96	943	-30.75	942	-26.55	941	-22.3	940
0	940	34.4	940	38.71	941	38.8	944.375	38.87	947
46.96	948	58.31	948.2	70.57	948	75.9	947	86.9	946
91.16	945	94.66	944	98.37	943	107.69	942.6	117.21	943
126.32	944	135.81	945	153.86	946	168.96	947	192.82	948
228.83	949	260.69	950						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-211.88	.1	-46.62	.04	38.8	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-46.62	38.8	431.44	431.44	431.44	.1	.3
--------	------	--------	--------	--------	----	----

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.2

INPUT

Description: upstream side of golf course bridge

Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-447.63	950	-427.81	949	-404.21	948	-363.98	947	-354.43	947
-326.97	948	-293.92	948	-279.59	947	-268.78	946	-247.6	945

-220	944.6	-190	944.6	-161.51	945	-157.36	946	-153.99	947
-150.74	948	-144.34	950	-131.72	951	-118.43	952	-93.24	952
-78.38	951	-41.27	950	-29.42	949	-24.84	948	-23.93	943.8
-23.32	941	14.13	941	19.74	944	58.7	944.2	130.43	944
142	943.8	153.11	944	221.86	945	234.36	946	260.9	947
331.6	948	417.21	949	466.8	950				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -447.63 .05 -23.93 .04 19.74 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -23.93 19.74 66.7 66.7 66.7 .1 .3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.1

INPUT  
 Description: downstream side of golf course bridge

Station Elevation Data num= 30									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-371.78	950	-324.22	949	-297.63	948	-277.31	947	-229.71	947
-210.41	947.4	-189.53	947	-182.71	946	-173.43	945	-156.91	944
-71.3	943.2	-29.68	944	-23.14	943	-21.97	941	22.28	941
27.58	943	30.47	944	64.57	944	81.76	943.9	98.62	944
129.33	944.2	165.63	944	186.54	943.8	207.96	944	267.39	945
295.31	946	316.92	947	411.8	948	484.09	949	504.63	950

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -371.78 .05 -29.68 .04 30.47 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -29.68 30.47 600 532.58 350 .1 .3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876

INPUT  
 Description: recoded using 2011 auditors topo

Station Elevation Data num= 39									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-203.03	950	-192.54	949	-186.47	947	-155.83	947	-142.21	946
-129.64	946	-53.79	947	-41.2	947.2	-29.46	947	-26.67	946

-23.86	945	-22.4	944	-21.27	943	-19.85	942	-18.34	941
-16.86	940	20.79	940	26.87	941	52.49	942	59.46	943
70.61	944	88.07	944.2	122.07	944	134.59	943	139.95	943
144.1	944	168.26	944	177.21	943	207.03	943	240.84	944
253.8	944	306.15	944	338.8	943.7	385.71	944	436.55	945
500.09	946	572.15	947	625.22	948	650.71	949		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-203.03	.05	-22.4	.04	70.61	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-22.4	70.61		715 816.04	640		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 875.9

INPUT  
 Description:

Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-213.79	949	-208.69	948	-205.46	947	-201.94	946	-197.5	945
-189.89	944	-160.97	943	-144.9	942	-122.47	942	-101.76	943
-66.91	943.2	-30.44	943	-26.12	942	-23.69	940	-22.49	939
12.85	939	15.6	940	18.01	941	79.68	942	110.47	942.2
136.46	942	158.2	941	180.33	941	191.53	942	197.9	943
202.5	944	210.51	944.6	217.84	944	220.03	943	223.52	942
226.88	941	240.19	940.8	253.95	941	256.81	942	259.64	943
263.13	944	267.04	945	271.19	946	275.49	947	290.29	948

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-213.79	.1	-26.12	.04	18.01	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.12	18.01		317 491.31	442		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 875.8

INPUT  
 Description:

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

-73.41	949	-68.19	948	-64.25	947	-60.33	946	-56.42	945
-45.72	944	-38.12	943	-31.03	942	-19.35	939	-15	938.5
15	938.5	26.12	939	29.49	940	32.81	941	36.1	942
99.06	942.1	132.84	943	146.95	944	154.92	945	168.37	946

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-73.41	.1	-31.03	.04	36.1	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-31.03	36.1		825 844.68	830		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 874

INPUT

Description:

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-164.21	947	-157.3	946	-152.86	945	-97.25	944	-84.7	943
-76.1	942	-61.76	941	-34.77	940	-30.56	939	-26.29	938
-20.94	937.9	16.53	937.9	19.16	938	21.36	939	23.59	940
48.97	941	100.15	941	173.42	940.4	310.14	941	351.5	942
406.42	943	426.11	944	437.47	945	470.33	946		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-164.21	.05	-34.77	.035	23.59	.055

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-34.77	23.59		173.87 173.87	173.87		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 873.9

INPUT

Description:

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-146.59	945	-143.01	944	-139.3	943	-107.32	942	-93.48	941
-83.9	940	-27.06	939	-21.7	938	-16.09	937	-12	936.9
15	936.9	16	937	17	938	18	939	19	940

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-146.59	.05	-27.06	.035	18	.055

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-27.06	18		.1	.04	.1	.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 873

INPUT

Description: FEMA Section U  
 Converted from 1929 datum to 1988 datum by  
 lowering elevations by 0.60-feet

Station Elevation Data	num=	55							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	972.4	250	972.4	500	972.4	750	972.4	850	972.4
933	972.4	1158	970.4	1444	963.4	1726	960.4	2009	955.4
2100	955.4	2280	955.4	2303	955.4	2303	969.4	2344	969.4
2345	955.4	2454	953.4	2574	953.4	2650	952.4	2830	952.4
2900	952.4	2915	952.4	3021	951.4	3038	951.4	3250	949.79
3301	949.4	3460	945.4	3575	945.4	3700	945.4	3727	935.4
3735	930.4	3769	930.4	3773	932.4	3801	933.4	3906	934.4
3986	933.4	4075	935.4	4110	936.59	4252	941.4	4370	944.59
4508	948.4	4580	948.4	4873	948.4	5124	950.4	5406	953.4
5746	957.4	5989	957.4	6098	958.4	6253	961.4	6380	958.4
6520	958.4	6633	959.4	6989	960.4	7323	961.4	7644	963.4

Manning's n Values	num=	9							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.055	850	.05	3250	.055	3575	.05	3727	.035
4075	.055	4110	.05	4370	.055	4580	.05		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	3727	4075		0	0	0	.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.553

INPUT

Description:  
 Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-76.15	1021	-71.78	1020	-67.28	1019	-62.83	1018	-22.16	1017
-8.21	1016	-7	1015.1	7	1015.1	8.29	1016	11.02	1017

20.7 1018 46.17 1019 57.78 1020 70.43 1021

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-76.15 .05 -8.21 .04 8.29 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-8.21 8.29 47.82 47.82 47.82 .1 .3

#### LATERAL STRUCTURE

RIVER: Sugar Run  
REACH: 1 RS: 3.550

#### INPUT

Description:  
Lateral structure position = Right overbank  
Distance from Upstream XS =  
Deck/Roadway Width = 20  
Weir Coefficient = 2  
Weir Flow Reference = Water Surface  
Weir Embankment Coordinates num = 2  
Sta Elev Sta Elev  
0 1017.5 40 1017.5

Weir crest shape = Broad Crested

#### CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.544

#### INPUT

Description:  
Station Elevation Data num= 13  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
-11.31 1020 -9.07 1018 -7.92 1017 -6.75 1016 -5.69 1015  
-4.5 1014.6 4.5 1014.6 5.45 1015 8.6 1016 11.7 1017  
23.22 1018 27.85 1019 32.49 1020

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-11.31 .05 -6.75 .04 8.6 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-6.75 8.6 25.52 25.52 25.52 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 3.539

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev		Sta	Elev	Sta	Elev	Sta	Elev
-27.66	1020	-23.77	1019	14	-13.85	1018	-10.3	1017	-8.11	1016
-6.07	1015	-5	1014.4		4	1014.4	5.43	1015	7.14	1016
8.81	1017	10.46	1018		12.1	1019	13.75	1020		

Manning's n Values						num=						
Sta	n Val	Sta	n Val	Sta	n Val		Sta	n Val	Sta	n Val		
-27.66	.05	-8.11	.04	7.14	.05	3						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-8.11	7.14		66	56.82		.3	.5

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 3.528

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev		Sta	Elev	Sta	Elev	Sta	Elev
-10.8	1020	-9.19	1018	12	-7.58	1016	-6.8	1015	-6.05	1014
6.89	1014	9.32	1015		11.97	1016	25.51	1017	35.05	1018
38.69	1019	44.11	1020							

Manning's n Values						num=						
Sta	n Val	Sta	n Val	Sta	n Val		Sta	n Val	Sta	n Val		
-10.8	.05	-7.58	.04	11.97	.05	3						

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.58	11.97		94	91.37		.1	.3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 3.511

INPUT

Description:



Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-15.85	1020	-8.48	1015	-6.95	1014	-6	1013.5	5	1013.5
7.06	1014	9.73	1015	13.07	1016	34.71	1017	44.18	1018
49.29	1019								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-15.85	.1	-8.48	.04	9.73	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-8.48	9.73	96.26	96.26	96.26	.1	.3
-------	------	-------	-------	-------	----	----

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.493

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.04	1019	-35.28	1018	-27.52	1017	-16.3	1016	-12.25	1015
-9.58	1014	-8	1013.1	7	1013.1	8.84	1014	11.28	1015
16.08	1016	23.61	1017	30.15	1018	42.17	1019		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.04	.1	-16.3	.04	16.08	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-16.3	16.08	49	47.99	47	.1	.3
-------	-------	----	-------	----	----	----

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.484

INPUT

Description: upstream side of western driveway culvert

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.76	1018	-33.79	1017	-11.38	1016	-9.17	1015	-7.72	1014
-6.49	1013	-5.5	1012.8	2.5	1012.8	3.37	1013	5.2	1014
7.16	1015	9.18	1016	11.26	1017	13.47	1018		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

-49.76 .1 -11.38 .04 9.18 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-11.38 9.18 45 39.47 34 .3 .5

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 3.476

INPUT

Description: downstream side of western driveway culvert

Station Elevation Data		num= 20							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-16.67	1018	-14.17	1017	-11.04	1016	-9	1015	-7.28	1014
-5.62	1013	4.03	1013	6.79	1014	9.46	1015	12	1016
14.3	1017	19.02	1018	25.73	1018.2	33.52	1018	38.22	1017
40.44	1016	53.56	1015.2	90.4	1016	113.5	1017	181.51	1018

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-16.67	.1	-9	.04	9.46	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-9 9.46 175 185.84 196 .3 .5

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 3.441

INPUT

Description:

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-19.93	1016	-16.34	1015	-12.65	1014	-9.86	1013	-7.49	1012
-6	1011.5	9	1011.5	10.47	1012	14.77	1013	19.14	1014
91.58	1015	126.92	1016						

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-19.93	.1	-12.65	.04	19.14	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-12.65 19.14 245 253.25 248 .1 .3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.393

INPUT

Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-148.96	1016	-126.58	1015	-118.61	1014	-111.27	1013	-100.85	1012		
-83.16	1011.6	-65.28	1012	-57.33	1012.1	-48.79	1012	-9.22	1011		
-4.53	1010	-4	1009.5	6	1009.5	6.62	1010	9.63	1011		
12.38	1012	16.29	1013	37.89	1014	50.58	1015	77.91	1016		

Manning's n Values					
Sta	n Val	Sta	n Val	Sta	n Val
-148.96	.1	-9.22	.04	9.63	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-9.22	9.63		160	191.77		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.357

INPUT

Description:

Station Elevation Data											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-52.21	1015	-42.4	1014	-36.39	1013	-30.12	1012	-25.41	1011		
-21.9	1010	-6.47	1009	-3.82	1008	-3	1007.7	6	1007.7		
8.84	1008	11.15	1009	13.86	1010	46.14	1011	53.71	1012		
60.99	1013	67.69	1014	75.29	1015						

Manning's n Values					
Sta	n Val	Sta	n Val	Sta	n Val
-52.21	.1	-6.47	.04	13.86	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-6.47	13.86		228	223.28		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.314

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-40.83	1011	-33.01	1010	-25.11	1009	-17.26	1008	-10.46	1007	
-4.84	1006	-1.79	1005	4.88	1005	8.62	1006	12.9	1007	
21.89	1008	31.89	1009	44.53	1010	57.49	1011			

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-40.83	.1	-10.46	.04	12.9	.1	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.46	12.9		131.16	131.16		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.290

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-56.21	1010	-50.5	1009	-45.29	1008	-39.72	1007	-35.71	1006	
-7.91	1005	-4.97	1004	10.17	1004	18.31	1005	28.39	1005	
35.51	1006	52.61	1007	67.95	1008	75.19	1009	78.18	1010	

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-56.21	.1	-7.91	.04	18.31	.1	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.91	18.31		200	250.66		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.242

INPUT

Description: upstream side of the New Albany Road east culvert

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-165.56	1010	-159.97	1009	-154.58	1008	-145.81	1007	-129.75	1006	
-90.61	1005	-74.07	1004	-35.8	1003	-26.34	1002	-6.26	1001.2	
5.58	1001.2	8.33	1002	9.11	1008					

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	

-165.56 .06 -26.34 .04 8.33 .04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-26.34 8.33 241.51 241.51 241.51 .3 .5  
Ineffective Flow num= 1  
Sta L Sta R Elev Permanent  
-165.56 -66.62 1012 T

CULVERT

RIVER: Sugar Run  
REACH: 1 RS: 3.22

INPUT

Description: bridge plans are on 1929 datum, elevations converted to 1988 datum  
by lowering 0.60 feet

Distance from Upstream XS = 65  
Deck/Roadway Width = 108  
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates  
num= 2  
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
-200 1012 100 1012

Upstream Bridge Cross Section Data

Station Elevation Data num= 13  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
-165.56 1010 -159.97 1009 -154.58 1008 -145.81 1007 -129.75 1006  
-90.61 1005 -74.07 1004 -35.8 1003 -26.34 1002 -6.26 1001.2  
5.58 1001.2 8.33 1002 9.11 1008

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-165.56 .06 -26.34 .04 8.33 .04

Bank Sta: Left Right Coeff Contr. Expan.  
-26.34 8.33 .3 .5  
Ineffective Flow num= 1  
Sta L Sta R Elev Permanent  
-165.56 -66.62 1012 T

Downstream Deck/Roadway Coordinates  
num= 2  
Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
-200 1012 100 1012

Downstream Bridge Cross Section Data

Station Elevation Data num= 16  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

-23.02	1005	-19.45	1004	-15.54	1003	-12.33	1002	-10.22	1001
-8.48	1000	-6.8	999	-5.5	998.3	4.5	998.3	5.74	999
8.27	1000	11.32	1001	14.68	1002	18.31	1003	22.09	1004
27.21	1005								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-23.02	.05	-8.48	.04	8.27	.1

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	-8.48	8.27		.3	.5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
Maximum allowable submergence for weir flow = .98  
Elevation at which weir flow begins =  
Energy head used in spillway design =  
Spillway height used in design =  
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span			
Culvert #1	Conspan Arch	9	32			
FHWA Chart # 60- Span/Rise ratio approximate 2:1						
FHWA Scale # 1 - 0 degree wing wall angle						
Solution Criteria = Highest U.S. EG						
Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	
Exit Loss Coef						
	29.3	170	.013	.02	1	.4

1  
Upstream Elevation = 999.5  
Centerline Station = 0  
Downstream Elevation = 997.96  
Centerline Station = 0

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.196

INPUT

Description: downstream side of the New Albany Road east culvert

Station Elevation Data	num=	16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-23.02	1005	-19.45	1004	-15.54	1003	-12.33	1002	-10.22	1001
-8.48	1000	-6.8	999	-5.5	998.3	4.5	998.3	5.74	999
8.27	1000	11.32	1001	14.68	1002	18.31	1003	22.09	1004
27.21	1005								

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -23.02 .05 -8.48 .04 8.27 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -8.48 8.27 86 91.84 88 .3 .5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.179

INPUT

Description:

Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -34.39 1003 -31.14 1002 -28.01 1001 -25.05 1000 -20.86 999  
 -8.52 998 -6 997.8 4 997.8 5.46 998 7.86 999  
 10.24 1000 43.02 1001 56.7 1002 70.47 1003

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -34.39 .1 -8.52 .04 10.24 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -8.52 10.24 200 165.71 127 .1 .3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.148

INPUT

Description:

Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -84.34 1001 -56 1000 -12.77 999 -9.72 998 -7.37 997  
 -5.08 996 -4 995.9 4 995.9 5.86 996 8.83 997  
 12.12 998 20.79 999 78.69 1000 104.12 1001

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -84.34 .1 -12.77 .04 20.79 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -12.77 20.79 374 384.63 325 .1 .3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 3.075

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev		Sta	Elev	Sta	Elev	Sta	Elev
-69.29	997	-64.02	996	12	-51.54	995	-15.94	994	-8.83	993
-6	992.5	5	992.5		7.25	993	10.31	994	15.31	995
88.7	996	90.9	997							

Manning's n Values						num=			
Sta	n Val	Sta	n Val	Sta	n Val		Sta	n Val	
-69.29	.1	-15.94	.04	10.31	.1	3			

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-15.94	10.31		115	140.6		.1	.3
					174			

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 3.048

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev		Sta	Elev	Sta	Elev	Sta	Elev
-52.4	996	-48.13	995	11	-37.86	994	-16.23	993	-10.49	992
6.73	992	11.38	993		55.57	993.1	120.55	994	129.1	995
138.29	996									

Manning's n Values						num=			
Sta	n Val	Sta	n Val	Sta	n Val		Sta	n Val	
-52.4	.1	-16.23	.04	11.38	.1	3			

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-16.23	11.38		487	598.33		.1	.3
					508			

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.933

INPUT

Description:



Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.78	995	-25.82	994	-20.54	993	-15.81	992	-14.03	991
-12.47	990	-10.92	989	-9.39	988	-7.89	987	-6	986.6
6	986.6	6.94	987	9.46	988	11.91	989	14.43	990
106.74	991	116.24	992	120.59	993	126.79	994		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.78	.1	-12.47	.04	14.43	.05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-12.47	14.43	366	421.46	430	.1	.3
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CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 2.855

INPUT  
Description:

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-170.27	990	-135.64	989	-102.34	988	-60.43	987.1	-28.17	987
-13.86	986	-8.1	985	-3.96	984	19.08	984	20.75	985
22.46	986	24.2	987	25.93	988	27.65	989	29.68	990

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-170.27	.1	-13.86	.04	22.46	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-13.86	22.46	360	361.29	320	.1	.3
--------	-------	-----	--------	-----	----	----

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 2.786

INPUT  
Description:

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-77.69	987	-73.85	985	-72.43	984	-71.34	983	-28.5	983
-25.37	984	-22.21	985	-16.13	985	-11.1	984	-7.44	983
-6	982.2	6	982.2	9.38	983	50.6	984	95.03	985
101.63	986	106.58	987						

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -77.69 .06 -7.44 .04 9.38 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -7.44 9.38 258 291.74 240 .1 .3  
 Ineffective Flow num= 1  
 Sta L Sta R Elev Permanent  
 -77.69 -22.21 985 T

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.731

INPUT

Description: upstream side of New Albany Road West Conspan

Station Elevation Data num= 17  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -43.99 985 -41.87 984 -39.82 983 -37.94 982 -30.89 981  
 -13.41 980 -4.71 979 -4 978.5 4 978.5 7.48 979  
 9.55 980 11.64 981 14.04 982 45.2 982 57.74 983  
 69.04 984 79.57 985

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -43.99 .08 -13.41 .04 14.04 .08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -13.41 14.04 226.56 226.56 226.56 .3 .5

CULVERT

RIVER: Sugar Run  
 REACH: 1 RS: 2.70

INPUT

Description:

Distance from Upstream XS = 58  
 Deck/Roadway Width = 106  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 2  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -200 987 200 987

Upstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.99	985	-41.87	984	-39.82	983	-37.94	982	-30.89	981
-13.41	980	-4.71	979	-4	978.5	4	978.5	7.48	979
9.55	980	11.64	981	14.04	982	45.2	982	57.74	983
69.04	984	79.57	985						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.99	.08	-13.41	.04	14.04	.08

Bank Sta: Left Right Coeff Contr. Expan.

-13.41	14.04	.3	.5
--------	-------	----	----

Downstream Deck/Roadway Coordinates num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-200	987		200	987	

Downstream Bridge Cross Section Data

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-66.01	984	-57.13	983	-46.56	982	-36.65	981	-27.57	980
-13.74	979	-8.86	978	-6.83	977	-5	976.9	4.5	976.9
5.98	977	9.29	978	13.69	979	17.02	980	20.16	981
21.52	982	22.59	983	26.82	984				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-66.01	.08	-13.74	.04	13.69	.08

Bank Sta: Left Right Coeff Contr. Expan.

-13.74	13.69	.3	.5
--------	-------	----	----

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Culvert #1 Conspan Arch 8.1 32  
 FHWA Chart # 60- Span/Rise ratio approximate 2:1  
 FHWA Scale # 2 - 45 degree wing wall angle  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef  
 Exit Loss Coef

1  
 Upstream Elevation = 978  
 Centerline Station = 0  
 Downstream Elevation = 977.05  
 Centerline Station = 0

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.688

INPUT

Description: downstream side of New Albany Road West Conspan

Station Elevation Data num= 18									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-66.01	984	-57.13	983	-46.56	982	-36.65	981	-27.57	980
-13.74	979	-8.86	978	-6.83	977	-5	976.9	4.5	976.9
5.98	977	9.29	978	13.69	979	17.02	980	20.16	981
21.52	982	22.59	983	26.82	984				

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-66.01	.08	-13.74	.04	13.69	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.74	13.69		155 204.36	202		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.650

INPUT

Description:

Station Elevation Data num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50.44	982	-15.06	981	-12.45	980	-10.2	979	-8.24	978
-6.3	977	-4.36	976	-3.5	975.5	3.5	975.5	4.3	976
7.61	977	11.07	978	14.33	979	23.16	980	82.42	981
112.38	982								

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-50.44	.1	-10.2	.04	14.33	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.2	14.33		54.54 54.54	54.54		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.639

INPUT

Description:

Station Elevation Data		num= 16									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-80.35	982	-71.97	981	-55.34	980	-20.73	979	-10.6	978		
-8.44	977	-6.53	976	-4.79	975	4	975	7.35	976		
17.11	977	25.61	978	36.14	979	58.41	980	107.28	981		
132.81	982										

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-80.35	.1	-10.6	.04	25.61	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.6	25.61		110	121.46		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.616

INPUT

Description:

Station Elevation Data		num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-163.87	981	-155.46	980	-136.62	979	-76.97	978.8	-45.75	978		
-29.51	977	-17.1	976	-12.48	975	-7.62	974	7.45	974		
9.48	975	11.4	976	15.16	977	34.08	978	98.33	979		
140.06	980	170.21	981								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-163.87	.1	-17.1	.04	11.4	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.1	11.4		221	226.88		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.573

INPUT

Description:

Station Elevation Data										num=	29
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-181.13	980	-171.93	979.9	-163.71	980	-116.63	980.2	-77.88	980		
-60.05	979	-55.36	978	-53.19	977	-51.05	976	-48.47	975.7		
-45.69	976	-11.03	976	-8.69	975	-6.15	974	-4.5	973.4		
7	973.4	9.42	974	10.95	975	12.76	976	14.97	977		
27.45	977.3	39.75	977	67.1	976.7	94.53	977	108.67	977		
149.51	977.2	190.98	978	197.94	979	202.35	980				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-181.13	.1	-11.03	.04	12.76	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-11.03	12.76		410 825.21	770		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.417

INPUT

Description:

Station Elevation Data										num=	29
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-435.06	980	-429.42	979	-420.9	978	-395.36	977	-373.21	976		
-332.24	975	-327.35	975	-277.15	975.5	-235.75	975	-232.55	974		
-220.15	974	-156.29	974.8	-92.05	974	-76.66	973.8	-60.52	974		
-48.04	974	-38.62	973	-31.2	973	-10.46	973	-8.15	972		
-6	971.6	6	971.6	8.98	972	11.21	973	17.53	976		
21.6	977	26.58	978	30.43	979	33.62	980				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-435.06	.1	-10.46	.04	11.21	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.46	11.21		350 409.04	369		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.340

INPUT

Description:

Station Elevation Data										num=	22
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142.62	980	-133.33	979	-121.79	978	-111.04	977	-96.36	976		
-66.31	975	-17.87	974	-16	973	-10.91	972	-6.52	971		
-5	970.9	6	970.9	7.69	971	12.98	972	18.84	973		
25.52	974	34.1	975	45.38	976	54.78	977	62.86	978		
70.61	979	79.08	980								

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-142.62	.1	-17.87	.04	18.84	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.87	18.84		335	318.38		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.279

INPUT

Description:

Station Elevation Data										num=	35
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.52	980	-44.65	979	-38.15	978	-33.96	977	-28.51	976		
-21.13	975	-16.14	974	-14.53	973	-13.27	972	-11.99	971		
-10.7	970	-8	969.1	8	969.1	9.73	970	11.58	971		
13.44	972	30	972.1	61.16	972	74.98	972.2	86.57	972		
98.4	971	108.81	971	112.26	972	122.48	972.2	132.15	972		
142.03	971.6	152.43	972	160.23	973	181.81	974	194.1	975		
204.83	976	211.33	977	216.72	978	222.52	979	226.61	980		

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-49.52	.1	-13.27	.04	13.44	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.27	13.44		215	366.02		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.210

INPUT

Description:

Station Elevation Data										num=	22
------------------------	--	--	--	--	--	--	--	--	--	------	----

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-58.49	978	-52.48	977	-46.9	976	-41.21	975	-36.58	974
-31.51	973	-16.66	972	-14.5	971	-12.36	970	-10.2	969
-8	968.1	8	968.1	11.17	969	15.12	970	29.54	971
70.29	972	107	973	126.85	974	136.86	975	145.22	976
152.39	977	159.27	978						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-58.49	.1	-12.36	.04	15.12	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-12.36	15.12		260	315.42		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.150

INPUT

Description:

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-54.73	978	-52.35	977	-49.85	976	-47.47	975	-45.11	974
-42.68	973	-39.89	972	-38.51	971	-33.62	970	-24.31	969.1
-14.19	969.3	-7.47	969	-5.94	968	-4	967.5	7	967.5
9.77	968	19.4	969	71.21	970	76.03	971	79.6	972
85.26	973	93.98	974	100.67	975	104.9	976	109.14	977
117.09	978								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-54.73	.09	-7.47	.04	19.4	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.47	19.4		305.03	305.03		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-54.73	-39.89	984	T
38.84	117.09	984	T

CULVERT

RIVER: Sugar Run  
 REACH: 1 RS: 2.1

INPUT

Description: SR 161 bypass culverts per plan



lowered 0.60 feet to convert from  
 1929 to 1988 datum  
 plans showed a distance of 211 feet, but they  
 measure 238 feet by aerial

Distance from Upstream XS = 56  
 Deck/Roadway Width = 188  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates  
 num= 2  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -100 984 200 984

Upstream Bridge Cross Section Data

Station Elevation Data num= 26  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -54.73 978 -52.35 977 -49.85 976 -47.47 975 -45.11 974  
 -42.68 973 -39.89 972 -38.51 971 -33.62 970 -24.31 969.1  
 -14.19 969.3 -7.47 969 -5.94 968 -4 967.5 7 967.5  
 9.77 968 19.4 969 71.21 970 76.03 971 79.6 972  
 85.26 973 93.98 974 100.67 975 104.9 976 109.14 977  
 117.09 978

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -54.73 .09 -7.47 .04 19.4 .09

Bank Sta: Left Right Coeff Contr. Expan.  
 -7.47 19.4 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -54.73 -39.89 984 T  
 38.84 117.09 984 T

Downstream Deck/Roadway Coordinates  
 num= 2  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -100 984 200 984

Downstream Bridge Cross Section Data

Station Elevation Data num= 20  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -78.36 975 -73.31 974 -68.95 973 -35.74 972 -24.79 971  
 -21.75 970 -18.69 969 -14.55 968 -10.42 967 -8 966.7  
 8 966.7 10.59 967 13.83 968 17.05 969 20.27 970  
 24.53 971 29.21 972 41.3 973 48.45 974 53.02 975

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -78.36 .09 -24.79 .04 24.53 .09

Bank Sta: Left Right Coeff Contr. Expan.  
 -24.79 24.53 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -78.36 -43.57 984 T  
 28.22 53.02 984 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 2

Culvert Name Shape Rise Span  
 Culvert #1 Box 7 14  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
1	29	238	.013	.013	0	.4	

Upstream Elevation = 967.43  
 Centerline Station = -8  
 Downstream Elevation = 966.82  
 Centerline Station = -8

Culvert Name Shape Rise Span  
 Culvert #2 Box 7 14  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
1	10	238	.013	.013	0	.4	

Upstream Elevation = 967.4  
 Centerline Station = 8  
 Downstream Elevation = 966.78  
 Centerline Station = 8

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.092

INPUT

Description:

Station Elevation Data										num=	20
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-78.36	975	-73.31	974	-68.95	973	-35.74	972	-24.79	971		
-21.75	970	-18.69	969	-14.55	968	-10.42	967	-8	966.7		
8	966.7	10.59	967	13.83	968	17.05	969	20.27	970		
24.53	971	29.21	972	41.3	973	48.45	974	53.02	975		

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-78.36	.09	-24.79	.04	24.53	.09		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-24.79	24.53		152 166.03	180		.3	.5

Ineffective Flow					num=	2
Sta L	Sta R	Elev	Permanent			
-78.36	-43.57	984	T			
28.22	53.02	984	T			

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.061

INPUT

Description: From LOMR Case # 97-05-203P  
Section 906.5

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data										num=	12
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
162	975.4	182	973.4	214	969.4	268	969.4	287	967.4		
294	966.4	306	966.4	322	969.4	383	969.4	434	971.4		
524	973.4	547	975.4								

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
162	.09	287	.04	322	.09		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	287	322		415 415	415		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.982

INPUT

Description: From LOMR Case # 97-05-203P  
Section 906.0

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num= 12							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
93	973.4	112	971.4	223	969.4	282	967.4	292	965.4
296	964.4	304	964.4	310	965.4	323	967.4	424	969.4
447	971.4	461	973.4						

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
93	.09	282	.04	323	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	282	323		450	573		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.874

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.6

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num= 13							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
158	975.4	191	971.4	255	969.4	271	967.4	284	965.4
290	963.4	306	963.4	315	965.4	327	967.4	343	969.4
350	971.4	368	973.4	380	975.4				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
158	.09	284	.04	315	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	315		210	210		.3	.5

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.834

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.5

Recoded using 2011  
Auditors Contours and Record Plans

Elevations lowered 0.60-ft  
to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
160.61	980	181.11	979	208.7	978	231.82	977	261.12	976
278.99	975	282.89	974	284	962.8	300	962.8	316	962.8
317.42	965	318.33	973	377.52	974	390.2	975	402.4	976
414.3	977	428.8	978						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
160.61	.06	284	.04	316	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	316		45	45		.3	.5

Ineffective Flow num= 2				
Sta L	Sta R	Elev	Permanent	
160.61	284	975.38	T	
316	428.8	973.65	T	

BRIDGE

RIVER: Sugar Run  
REACH: 1 RS: 1.83

INPUT

Description: Fodor Road Bridge  
Lowered 0.60 feet to convert from 1929 to 1988  
vertical datum

Distance from Upstream XS = 1  
Deck/Roadway Width = 43  
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates num= 26									
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta
209.54	977.9		284	975.39	960.6	284.01	975.39	964.09	
285.17	975.35	966.91	289.13	975.2	969.09	294.51	975.01	970.22	
	295	974.99	970.25	300	974.82	970.6	305	974.65	970.25
305.49	974.63	970.22	310.87	974.5	969.09	314.83	974.38	966.91	
	315	974.36	966.73	315.99	974.34	964.09	316	974.34	960.6

325	974.12	335	973.93	345	973.78
355	973.68	365	973.62	375	973.64
385	973.69	395	973.78	405	973.93
473.57	975.1	630	977.76		

Upstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
160.61	980	181.11	979	208.7	978	231.82	977	261.12	976
278.99	975	282.89	974	284	962.8	300	962.8	316	962.8
317.42	965	318.33	973	377.52	974	390.2	975	402.4	976
414.3	977	428.8	978						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
160.61	.06	284	.04	316	.06

Bank Sta: Left Right Coeff Contr. Expan.

	284	316	.3	.5
--	-----	-----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
160.61	284	975.38	T
316	428.8	973.65	T

Downstream Deck/Roadway Coordinates

num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
209.54	977.9		284	975.39	960.6	284.01	975.39	964.09
285.17	975.35	966.91	289.13	975.2	969.09	294.51	975.01	970.22
295	974.99	970.25	300	974.82	970.6	305	974.65	970.25
305.49	974.63	970.22	310.87	974.5	969.09	314.83	974.38	966.91
315	974.36	966.73	315.99	974.34	964.09	316	974.34	960.6
325	974.12		335	973.93		345	973.78	
355	973.68		365	973.62		375	973.64	
385	973.69		395	973.78		405	973.93	
473.57	975.1		630	977.76				

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
224.24	979	235.23	978	242.98	977	260.69	976	276.67	975
282.78	974	284	962.7	300	962.7	316	962.7	316.81	973
408.88	974	445.7	975	475.94	976	520.85	977	574.85	978
580	979								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
224.24	.06	284	.04	316	.06

Bank Sta: Left Right Coeff Contr. Expan.

	284	316		.3	.5
Ineffective Flow		num=	2		
Sta L	Sta R	Elev	Permanent		
224.24	284	975.39	T		
316	580	973.62	T		

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
Maximum allowable submergence for weir flow = .98  
Elevation at which weir flow begins =  
Energy head used in spillway design =  
Spillway height used in design =  
Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Energy

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =  
Submerged Inlet + Outlet Cd = .8  
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.826

INPUT

Description: From LOMR Case # 97-05-203P

Section 905.4

Recoded using 2011

Auditors Contours and Record Plans

Elevations lowered 0.60-ft

to convert from 1929 to 1988 vertical datum

Station	Elevation	Data	num=	16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

224.24	979	235.23	978	242.98	977	260.69	976	276.67	975
282.78	974	284	962.7	300	962.7	316	962.7	316.81	973
408.88	974	445.7	975	475.94	976	520.85	977	574.85	978
580	979								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
224.24	.06	284	.04	316	.06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

284	316	161	161	161	.3	.5
-----	-----	-----	-----	-----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
224.24	284	975.39	T
316	580	973.62	T

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.795

INPUT  
 Description: From LOMR Case # 97-05-203P  
 Section 905.3

Elevations lowered  
 0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
206	974.4	262	969.4	272	968.4	283	967.4	288	964.4
290	961.6	310	961.4	316	962.4	320	964.4	370	965.4
436	969.4	485	971.4						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
206	.09	288	.04	320	.09

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

288	320	147	172	120	.1	.3
-----	-----	-----	-----	-----	----	----

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.763

INPUT  
 Description: From LOMR Case # 97-05-203P  
 Section 905.2



Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		9					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
230	969.4	275	966.4	284	964.4	288	960.8	314	961.2
325	964.4	329	965.4	358	967.4	440	969.4		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
230	.09	284	.04	325	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	325		253	258		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.714

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.1

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		8					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
151	969.4	208	965.4	290	964.4	294	960.8	309	961.1
315	964.4	325	967.4	468	969.4				

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
151	.09	290	.04	315	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	290	315		108	145		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.686

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.0

Stream Reach lengths

changed to tie into new sections downstream

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
152	969.4	177	968.4	217	967.4	251	965.4	280	964.4
286	963.4	291	960.9	310	960.8	316	965.4	343	967.4
371	967.4	396	966.4	430	967.4	445	969.4		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
152	.09	286	.04	316	.08

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
286 316 435 532.69 564 .1 .3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.585

INPUT

Description:

Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.34	968	-34.64	967	-24.58	966	-18.68	965	-14.63	964
-12.26	963	-10.38	962	-8.56	961	-7	960.6	11	960.6
12.99	961	15.06	962	17.92	963	22.52	964	59.53	965
85.14	966	127.11	967	135.25	968				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49.34	.1	-14.63	.04	22.52	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-14.63 22.52 375 350.57 282 .1 .3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.519

INPUT

Description:

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.12	968	-38.04	967	-27.34	966	-23.37	965	-20.85	964
-18.28	963	-16.02	962	-13.8	961	-11.32	960	7.45	960
10.59	961	12.92	962	17.57	963	30.72	964	37.45	964.1

44.48	964	61.87	963.7	79.27	964	86.17	964.1	96.32	964
130.13	965	138.27	966	145.75	967	150.2	968		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49.12	.1	-18.28	.04	17.57	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.28	17.57		570 575.72	550		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.410

INPUT

Description:

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50.32	966	-46.01	965	-43.47	964	-40.89	963	-36.59	962
-20.12	961	-17.33	960	-12	959.15	10	959.15	15.13	960
17.71	961	20.28	962	53.25	962.4	93.22	963	103.45	964
109.96	965	115.45	966						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-50.32	.1	-20.12	.04	20.28	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-20.12	20.28		375 373.43	248		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.339

INPUT

Description:

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50.72	965	-46.96	964	-42.01	963	-35.89	962	-19.6	961
-17.36	960	-15.13	959	-10	958.2	12	958.2	17.3	959
20.09	960	23.43	961	87	961.1	116.09	962	128.33	963
134.22	964	141.47	965						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-50.72	.1	-19.6	.04	23.43	.1

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-19.6	23.43	300	494.21	380		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.246

INPUT

Description:

Station Elevation Data	num=	17
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-29.09 964 -26.14 963 -23.41 962 -20.7 961 -17.84 960		
-15.34 959 -11.31 957 -8.5 956.7 6 956.7 8.6 957		
12.37 958 16.09 959 19.72 960 80.51 961 93.8 962		
102.8 963 110.86 964		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-29.09 .1 -17.84 .04 19.72 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-17.84	19.72	279.18	279.18	279.18		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.193

INPUT

Description:

Station Elevation Data	num=	25
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-50.04 963 -44.88 962 -27.03 961 -19.73 960 -15.99 959		
-14.25 958 -12.46 957 -10.64 956 -8 955.5 8 955.5		
13.38 956 15.18 957 16.9 958 25.73 959 28.33 959		
33.24 958.8 38.71 959 44.03 959.1 49.67 959 79.66 958.5		
113.83 959 116.98 960 121.44 961 129.02 962 139.11 963		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-50.04 .05 -15.99 .04 25.73 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-15.99	25.73	400	449.11	360		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.108

INPUT

Description: centerline of bike path bridge

Station Elevation Data num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-277.78	962	-267.1	961	-259.99	960	-255.69	959	-252.78	958
-143.58	958	-139.43	959	-133.53	960	-115.46	960	-90.42	959
-64.29	958	-33.81	957	-21.03	957	-15.69	956	-12.84	955
-9.14	954	-3.12	953.8	9.2	953.8	12.77	954	13.73	955
18.51	960	19.46	961	31.78	962				

Manning's n Values num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-277.78	.03	-115.46	.1	-21.03	.04	13.73	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.03	13.73		224 238.1	220		.1	.3

Ineffective Flow num= 1			
Sta L	Sta R	Elev	Permanent
-277.78	-133.53	960	T

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.063

INPUT

Description:

Station Elevation Data num= 20									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-159.9	962	-131.83	961	-114.46	960	-74.46	959	-54.61	958
-18.39	957	-15.34	956	-12.49	955	-9.68	954	-6.5	953.3
8	953.3	13.07	954	57	955	58.98	956	61.02	957
63.33	958	65.76	959	68.08	960	72.15	961	77.83	962

Manning's n Values num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-159.9	.1	-18.39	.04	13.07	.1	63.33	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.39	13.07		90 127.21	153		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.038

INPUT

Description:

Station Elevation Data num= 17											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-161.23	962	-113.62	961	-100.16	960	-93.74	959	-82.09	958		
-41.8	957	-21.87	956	-19.66	955	-17.71	954	-9.92	953.1		
8.13	953.1	13.02	954	16.57	957	125.76	958	185.8	959		
266.43	960	452.36	961								

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-161.23	.08	-21.87	.04	16.57	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.87	16.57		190 196.26	200		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.001

INPUT

Description:

Station Elevation Data num= 22											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-133.78	961	-122.04	960	-98.62	959	-73.82	958	-40.12	957		
-21.81	956	-16.31	955	-13.79	954	-11.34	953	-8	952.6		
7	952.6	8.98	953	11.45	954	13.88	955	16.51	956		
37.01	957	48.77	958	58.07	959	140	958.8	262.73	959		
276.35	959	292.95	960								

Manning's n Values num= 4									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-133.78	.1	-21.81	.04	16.51	.1	58.07	.05		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.81	16.51		374 367.84	348		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.932

INPUT

Description:

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-122.91	959	-100.35	958	-71.1	957.2	-55.88	957	-45.98	956
-29.15	955	-20.73	954	-17.25	953	-13.98	952	-8.85	951.9
-7.54	951.9	10	952	11.69	953	13.29	954	14.62	955
15.85	956	17.58	957	20.09	958	23.01	959		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-122.91	.06	-29.15	.04	14.62	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-29.15	14.62	66.13	66.13	66.13	.3	.5
--------	-------	-------	-------	-------	----	----

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-122.91	-60.84	959	T

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 0.919

INPUT

Description:

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.55	959	-26.07	955	-23.99	954	-21.78	953	-19.53	952
-13.61	951.8	6.67	951.8	9.43	952	11.28	953	13.11	954
18.3	955	164	955.2	171.92	956	221.24	957	236.7	958
253	959								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.55	.1	-26.07	.04	18.3	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-26.07	18.3	111	125.86	146	.3	.5
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
41.82	253	959	T

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 0.895

INPUT

Description:

Station Elevation Data									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-60.74	959	-54.03	958	-51.19	957	-48.85	956	-45.91	955
-17.59	954	-12.98	953	-8.05	952	-6	951.2	6	951.2
9.76	952	15.38	953	23.78	954	34.33	955	42	955.2
51.36	955	75.63	954	100.2	954	121.28	955	289.21	955
345.06	956	385.43	957	427.29	958	531.68	959		

Manning's n Values					
Sta	n Val	Sta	n Val	Sta	n Val
-60.74	.1	-17.59	.04	23.78	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.59	23.78		201.8	201.8		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1

RS: 0.857

INPUT

Description:

Station Elevation Data									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-72.2	960	-68.56	959	-65.53	958	-61.64	957	-57.39	956
-51.36	955	-23	954	-16.94	951	-12	950.8	10	950.8
13.2	951	19.47	954	208.77	955	213.87	954	218.52	953
221.85	952.2	224.17	953	226.44	954	228.78	955	233.75	956
239.12	957	254.39	958						

Manning's n Values					
Sta	n Val	Sta	n Val	Sta	n Val
-72.2	.1	-23	.04	19.47	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23	19.47		100.28	100.28		.1	.3

Ineffective Flow			
Sta L	Sta R	Elev	Permanent
126.95	254.39	958	T

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1

RS: 0.838

INPUT

Description:

Station Elevation Data	
num=	17



Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38.19	958	-37.56	957	-34.38	956	-29.85	955	-26.22	954
-23.53	953	-19.36	952	-14.89	951	0	950	14.68	951
19.5	952	23.84	953	28.34	954	33.27	955	34.71	956
36.13	957	37.97	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.19	.4	-26.22	.04	28.34	.4

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.22	28.34		46.22	46.22		.3	.5

BRIDGE

RIVER: Sugar Run  
 REACH: 1 RS: 0.833

INPUT

Description: Greensward Road  
 Distance from Upstream XS = 2  
 Deck/Roadway Width = 42  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 6		Sta Hi Cord Lo Cord				Sta Hi Cord Lo Cord				Sta Hi Cord Lo Cord				
-40	960.5					-35.19	960.5					-35.19	960.5	958
35.19	959.3	958	35.19	959.3				40	959.2					

Upstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38.19	958	-37.56	957	-34.38	956	-29.85	955	-26.22	954
-23.53	953	-19.36	952	-14.89	951	0	950	14.68	951
19.5	952	23.84	953	28.34	954	33.27	955	34.71	956
36.13	957	37.97	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.19	.4	-26.22	.04	28.34	.4

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	-26.22	28.34		.3	.5

Downstream Deck/Roadway Coordinates

num= 6		Sta Hi Cord Lo Cord				Sta Hi Cord Lo Cord				Sta Hi Cord Lo Cord				
-40	960.5					-35.19	960.5					-35.19	960.5	958
35.19	959.3	958	35.19	959.3				40	959.2					

Downstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.45	958	-35.68	957	-33.02	956	-27.94	955	-23.75	954
-19.27	953	-15.28	952	-11.5	951	0	950	11.18	951
15.07	952	19.98	953	26.24	954	34.26	955	35.2	956
36.07	957	37.08	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-36.45	.04	-23.75	.04	26.24	.04

Bank Sta: Left Right Coeff Contr. Expan.  
 -23.75 26.24 .3 .5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data

Pier Station	Upstream=	Downstream=
	-5	-5
Upstream num=	4	
Width Elev	Width Elev	Width Elev
2 945	2 956.21	2.5 956.21
Downstream num=	4	
Width Elev	Width Elev	Width Elev
2 945	2 956.21	2.5 956.21

Pier Data

Pier Station	Upstream=	Downstream=
	5	5
Upstream num=	4	
Width Elev	Width Elev	Width Elev
2 945	2 955.6	2.5 955.6
Downstream num=	4	
Width Elev	Width Elev	Width Elev
2 945	2 955.6	2.5 955.6

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =  
Submerged Inlet + Outlet Cd = .8  
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 0.829

INPUT

Description: existing cross section using 2011 1-ft contours

Station Elevation Data num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.45	958	-35.68	957	-33.02	956	-27.94	955	-23.75	954
-19.27	953	-15.28	952	-11.5	951	0	950	11.18	951
15.07	952	19.98	953	26.24	954	34.26	955	35.2	956
36.07	957	37.08	958						

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-36.45	.04	-23.75	.04	26.24	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.75	26.24		345	334.59		.3	.5
					315			

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 0.766

INPUT

Description: existing cross section using 2011 1-ft contours

Station Elevation Data num= 26									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-109.69	959	-103.72	957	-101.93	957	-86.6	956	-69.7	955
-48.47	954	-35.52	953	-28.1	952	-12.44	951	-8.66	950
-7.09	949.9	3.88	949.9	10.02	950	12.57	951	14.92	952
17.25	953	55.87	953	113.71	953	202.84	954	215.13	954

270	954	373.68	954	427.29	954	430.93	955	437.21	956
461.74	956.5								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-109.69	.1	-35.52	.04	17.25	.1	270	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-35.52	17.25		422.71 422.71	385		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.686

INPUT

Description:

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-169.97	960	-152.07	954	-146.94	953	-83.47	952.2	-35.49	952
-22.88	951	-16.4	950	-8	948	8.5	948	15	950
18.1	951	22.04	952	91.05	953	108.81	953.2	124.51	953
138.47	952.6	151.69	953	166.06	956	248.89	957		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-169.97	.1	-35.49	.04	22.04	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-35.49	22.04		510 527.16	488		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.586

INPUT

Description: FEMA Lettered Section B

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-130.32	956	-124.04	955	-118.04	954	-110.85	953	-96.25	952
-19.56	951	-12.4	948	-10	946.5	8	946.5	12.76	948
19.24	950	39.48	951	78.64	951.5	115.89	951	146.85	951
159.65	952	196.54	953	303.86	954	307.4	955	313.74	956

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-130.32	.1	-19.56	.04	19.24	.1

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-19.56	19.24	367	428.45	359		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.505

INPUT

Description:

Station Elevation Data	num=	20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-48.58 955 -28.76 954 -23.01 953 -19.37 952 -16.52 951		
-14.76 950 -13.03 949 -9.86 948 -5.94 947 -4 945.5		
5 945.5 7.26 947 10.58 948 13.89 949 19.16 950		
82.26 951 103.48 952 119.59 953 128.84 954 141.43 955		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-48.58 .1 -14.76 .04 19.16 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-14.76	19.16	71	63.38	51.7		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.493

INPUT

Description:

Station Elevation Data	num=	19
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-24.88 955 -17.89 954 -16.42 952 -8.79 947 -6 945.2		
-1.5 945.2 -1.5 956 1.5 956 1.5 945.2 9 945.2		
12.08 947 15.65 948 22.99 949 30.46 950 52.54 951		
71.12 952 81.7 953 89.85 954 99.35 955		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-24.88 .1 -8.79 .04 12.08 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-8.79	12.08	88.64	88.64	88.64		.3	.5

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 0.476

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-174.17	955	-102.96	954	-55.83	953	-39.83	952	-22.21	951
-9.54	947	-7	945	9	945	11.04	947	17.2	948
20.34	949	26.83	951	32.14	952	33.02	955		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-174.17	.1	-9.54	.04	11.04	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-9.54 11.04 150 143.04 140 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 0.450

INPUT

Description:

Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-150.15	952	-88.74	951	-75.17	950	-58.57	949.5	-33.8	950
-31.3	950	-17.77	949	-14.37	948	-11.08	947	-8.48	946
-5.8	944.6	6	944.6	10.17	946	13.22	947	16.22	948
19.16	949	21.98	950	35.14	951	43.36	952		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-150.15	.1	-11.08	.04	13.22	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-11.08 13.22 70 105 125 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1

RS: 0.429

INPUT

Description:

Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-206.45	952	-174.57	951	-158.53	950	-106.12	949.6	-66.31	950
-58	950.4	-51.3	950	-36.44	949	-28.9	948	-19.48	948
-15.66	947	-13.33	946	-10.8	945	-7	944.4	8	944.4
11.07	945	18.09	949	52.81	949	125.74	950	189.97	951
194.31	952								

Manning's n Values		num= 3	
Sta	n Val	Sta	n Val
-206.45	.1	-19.48	.04
		18.09	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-19.48	18.09		335	519.27		.1	.3
					557.2			

SUMMARY OF MANNING'S N VALUES

River:Rocky Fork

Reach	River Sta.	n1	n2	n3	n4	n5
n6	n7	n8	n9			
1	887.50	.05	.055	.035	.055	
.05						
1	886.69	.04	.04	.04		
1	886.6	Bridge				
1	886.51	.04	.04	.04		
1	886.4	.1	.04	.1		
1	886.3	.1	.04	.1	.035	
1	886.2	.1	.04	.1		
1	886.1	.1	.04	.1		
1	886	.1	.04	.1		
1	885.2	.1	.04	.1		
1	885.1	.1	.04	.1		
1	884	.1	.04	.1		
1	883.7	.1	.04	.1		

1	883.6	.1	.04	.1	
1	883.5	.06	.04	.06	
1	883.45	Bridge			
1	883.4	.1	.04	.1	
1	883.3	.1	.04	.1	
1	883.2	.1	.04	.1	
1	883.1	.1	.04	.1	
1	883	.1	.04	.1	
1	882	.1	.04	.1	
1	881.9	.1	.04	.1	
1	881.8	.035	.035	.035	
1	881.7	.035	.035	.035	
1	881.6	.1	.04	.1	
1	881.5	.1	.04	.1	
1	881.1	.1	.04	.1	
1	880.66	.1	.04	.1	
1	880.65	.08	.04	.1	
1	880.64	.08	.04	.1	
1	880.63	.1	.04	.1	
1	880.62	.1	.04	.1	
1	880.61	.1	.04	.1	
1	880.40	.04	.04	.04	
1	880.3	Bridge			
1	880.20	.04	.04	.04	
1	880.1	.1	.04	.01	.05



1		879		.1	.035	.1	
1		878		.1	.04	.1	.035
.1		877.5		.1	.04	.1	.035
.1		877.2		.1	.035	.1	.035
.1		877		.1	.035	.1	
1		876.5		.1	.04	.1	
1		876.2		.05	.04	.1	
1		876.1		.05	.04	.1	
1		876		.05	.04	.1	
1		875.9		.1	.04	.1	
1		875.8		.1	.04	.1	
1		874		.05	.035	.055	
1		873.9		.05	.035	.055	
1		873		.055	.05	.055	.05
.035	.055	.05	.055	.05			

River: Sugar Run

Reach	River Sta.	n1	n2	n3	n4
1	3.553	.05	.04	.05	
1	3.550	Lat Struct			
1	3.544	.05	.04	.05	
1	3.539	.05	.04	.05	
1	3.528	.05	.04	.05	
1	3.511	.1	.04	.05	
1	3.493	.1	.04	.04	
1	3.484	.1	.04	.06	
1	3.476	.1	.04	.06	
1	3.441	.1	.04	.06	
1	3.393	.1	.04	.1	
1	3.357	.1	.04	.1	
1	3.314	.1	.04	.1	
1	3.290	.1	.04	.1	

1	3.242	.06	.04	.04	
1	3.22	Culvert			
1	3.196	.05	.04	.1	
1	3.179	.1	.04	.1	
1	3.148	.1	.04	.1	
1	3.075	.1	.04	.1	
1	3.048	.1	.04	.1	
1	2.933	.1	.04	.05	
1	2.855	.1	.04	.1	
1	2.786	.06	.04	.1	
1	2.731	.08	.04	.08	
1	2.70	Culvert			
1	2.688	.08	.04	.08	
1	2.650	.1	.04	.1	
1	2.639	.1	.04	.1	
1	2.616	.1	.04	.1	
1	2.573	.1	.04	.1	
1	2.417	.1	.04	.1	
1	2.340	.1	.04	.1	
1	2.279	.1	.04	.1	
1	2.210	.1	.04	.1	
1	2.150	.09	.04	.09	
1	2.1	Culvert			
1	2.092	.09	.04	.09	
1	2.061	.09	.04	.09	
1	1.982	.09	.04	.09	
1	1.874	.09	.04	.09	
1	1.834	.06	.04	.06	
1	1.83	Bridge			
1	1.826	.06	.04	.06	
1	1.795	.09	.04	.09	
1	1.763	.09	.04	.09	
1	1.714	.09	.04	.08	
1	1.686	.09	.04	.08	
1	1.585	.1	.04	.1	
1	1.519	.1	.04	.1	
1	1.410	.1	.04	.1	
1	1.339	.1	.04	.1	
1	1.246	.1	.04	.1	
1	1.193	.05	.04	.1	
1	1.108	.03	.1	.04	.1
1	1.063	.1	.04	.1	.06
1	1.038	.08	.04	.06	
1	1.001	.1	.04	.1	.05
1	0.932	.06	.04	.1	
1	0.919	.1	.04	.1	
1	0.895	.1	.04	.1	
1	0.857	.1	.04	.06	
1	0.838	.4	.04	.4	
1	0.833	Bridge			

1	0.829	.04	.04	.04	
1	0.766	.1	.04	.1	.06
1	0.686	.1	.04	.1	
1	0.586	.1	.04	.1	
1	0.505	.1	.04	.1	
1	0.493	.1	.04	.1	
1	0.476	.1	.04	.1	
1	0.450	.1	.04	.1	
1	0.429	.1	.04	.1	

SUMMARY OF REACH LENGTHS

River: Rocky Fork

Reach	River Sta.	Left	Channel	Right
1	887.50	132.72	132.72	167
1	886.69	42.9	42.9	42.9
1	886.6	Bridge		
1	886.51	75	103.76	132
1	886.4	330	320.04	300
1	886.3	555	514.42	410
1	886.2	457	445.2	315
1	886.1	472	828.74	815
1	886	625	607.51	445
1	885.2	345	487.99	575
1	885.1	405	521.15	342
1	884	240	308.3	288
1	883.7	355	356.98	351
1	883.6	120	110.05	101
1	883.5	50.79	50.79	50.79
1	883.45	Bridge		
1	883.4	102.12	102.12	102.12
1	883.3	249	261.04	250
1	883.2	315	419.74	383
1	883.1	440	425.44	331
1	883	500	598.03	506
1	882	317	391.59	386
1	881.9	109.39	109.39	109.39
1	881.8	130.97	130.97	130.97
1	881.7	229.13	229.13	229.13
1	881.6	324.74	324.74	324.74
1	881.5	871.8	871.8	871.8
1	881.1	729.81	729.81	729.81
1	880.66	75.45	75.45	75.45
1	880.65	51.92	51.92	51.92
1	880.64	95	124.89	119

1	880.63	79.82	79.82	79.82
1	880.62	104.09	104.09	104.09
1	880.61	293	288.26	312
1	880.40	50	50	50
1	880.3	Bridge		
1	880.20	155	137.53	125
1	880.1	445	533.81	565
1	879	872.31	866.57	827.96
1	878	475	645.93	545
1	877.5	375	598.7	425
1	877.2	570	567	589
1	877	519	546.36	501
1	876.5	431.44	431.44	431.44
1	876.2	66.7	66.7	66.7
1	876.1	600	532.58	350
1	876	715	816.04	640
1	875.9	317	491.31	442
1	875.8	825	844.68	830
1	874	173.87	173.87	173.87
1	873.9	.1	.04	.1
1	873	0	0	0

River: Sugar Run

Reach	River Sta.	Left	Channel	Right
1	3.553	47.82	47.82	47.82
1	3.550	Lat Struct		
1	3.544	25.52	25.52	25.52
1	3.539	66	56.82	45
1	3.528	94	91.37	90
1	3.511	96.26	96.26	96.26
1	3.493	49	47.99	47
1	3.484	45	39.47	34
1	3.476	175	185.84	196
1	3.441	245	253.25	248
1	3.393	160	191.77	210
1	3.357	228	223.28	170
1	3.314	131.16	131.16	131.16
1	3.290	200	250.66	266
1	3.242	241.51	241.51	241.51
1	3.22	Culvert		
1	3.196	86	91.84	88
1	3.179	200	165.71	127
1	3.148	374	384.63	325
1	3.075	115	140.6	174
1	3.048	487	598.33	508
1	2.933	366	421.46	430
1	2.855	360	361.29	320

1	2.786	258	291.74	240
1	2.731	226.56	226.56	226.56
1	2.70	Culvert		
1	2.688	155	204.36	202
1	2.650	54.54	54.54	54.54
1	2.639	110	121.46	120
1	2.616	221	226.88	226
1	2.573	410	825.21	770
1	2.417	350	409.04	369
1	2.340	335	318.38	265
1	2.279	215	366.02	175
1	2.210	260	315.42	285
1	2.150	305.03	305.03	305.03
1	2.1	Culvert		
1	2.092	152	166.03	180
1	2.061	415	415	415
1	1.982	450	573	425
1	1.874	210	210	210
1	1.834	45	45	45
1	1.83	Bridge		
1	1.826	161	161	161
1	1.795	147	172	120
1	1.763	253	258	265
1	1.714	108	145	185
1	1.686	435	532.69	564
1	1.585	375	350.57	282
1	1.519	570	575.72	550
1	1.410	375	373.43	248
1	1.339	300	494.21	380
1	1.246	279.18	279.18	279.18
1	1.193	400	449.11	360
1	1.108	224	238.1	220
1	1.063	90	127.21	153
1	1.038	190	196.26	200
1	1.001	374	367.84	348
1	0.932	66.13	66.13	66.13
1	0.919	111	125.86	146
1	0.895	201.8	201.8	201.8
1	0.857	100.28	100.28	100.28
1	0.838	46.22	46.22	46.22
1	0.833	Bridge		
1	0.829	345	334.59	315
1	0.766	422.71	422.71	385
1	0.686	510	527.16	488
1	0.586	367	428.45	359
1	0.505	71	63.38	51.7
1	0.493	88.64	88.64	88.64
1	0.476	150	143.04	140
1	0.450	70	105	125
1	0.429	335	519.27	557.2

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
 River: Rocky Fork

Reach	River Sta.		Contr.	Expan.
1	887.50		.1	.3
1	886.69		.3	.5
1	886.6	Bridge		
1	886.51		.1	.3
1	886.4		.1	.3
1	886.3		.1	.3
1	886.2		.1	.3
1	886.1		.1	.3
1	886		.1	.3
1	885.2		.1	.3
1	885.1		.1	.3
1	884		.1	.3
1	883.7		.1	.3
1	883.6		.1	.3
1	883.5		.3	.5
1	883.45	Bridge		
1	883.4		.3	.5
1	883.3		.1	.3
1	883.2		.1	.3
1	883.1		.1	.3
1	883		.1	.3
1	882		.1	.3
1	881.9		.1	.3
1	881.8		.1	.3
1	881.7		.3	.5
1	881.6		.1	.3
1	881.5		.1	.3
1	881.1		.1	.3
1	880.66		.1	.3
1	880.65		.1	.3
1	880.64		.1	.3
1	880.63		.1	.3
1	880.62		.1	.3
1	880.61		.1	.3
1	880.40		.3	.5
1	880.3	Bridge		
1	880.20		.3	.5
1	880.1		.1	.3
1	879		.1	.3
1	878		.1	.3

1	877.5	.1	.3
1	877.2	.1	.3
1	877	.1	.3
1	876.5	.1	.3
1	876.2	.1	.3
1	876.1	.1	.3
1	876	.1	.3
1	875.9	.1	.3
1	875.8	.1	.3
1	874	.1	.3
1	873.9	.1	.3
1	873	.1	.3

River: Sugar Run

Reach	River Sta.	Contr.	Expan.
1	3.553	.1	.3
1	3.550	Lat Struct	.3
1	3.544	.1	.3
1	3.539	.3	.5
1	3.528	.1	.3
1	3.511	.1	.3
1	3.493	.1	.3
1	3.484	.3	.5
1	3.476	.3	.5
1	3.441	.1	.3
1	3.393	.1	.3
1	3.357	.1	.3
1	3.314	.1	.3
1	3.290	.1	.3
1	3.242	.3	.5
1	3.22	Culvert	
1	3.196	.3	.5
1	3.179	.1	.3
1	3.148	.1	.3
1	3.075	.1	.3
1	3.048	.1	.3
1	2.933	.1	.3
1	2.855	.1	.3
1	2.786	.1	.3
1	2.731	.3	.5
1	2.70	Culvert	
1	2.688	.3	.5
1	2.650	.1	.3
1	2.639	.1	.3
1	2.616	.1	.3
1	2.573	.1	.3
1	2.417	.1	.3

1	2.340	.1	.3
1	2.279	.1	.3
1	2.210	.1	.3
1	2.150	.3	.5
1	2.1	Culvert	
1	2.092	.3	.5
1	2.061	.1	.3
1	1.982	.1	.3
1	1.874	.3	.5
1	1.834	.3	.5
1	1.83	Bridge	
1	1.826	.3	.5
1	1.795	.1	.3
1	1.763	.1	.3
1	1.714	.1	.3
1	1.686	.1	.3
1	1.585	.1	.3
1	1.519	.1	.3
1	1.410	.1	.3
1	1.339	.1	.3
1	1.246	.1	.3
1	1.193	.1	.3
1	1.108	.1	.3
1	1.063	.1	.3
1	1.038	.1	.3
1	1.001	.1	.3
1	0.932	.3	.5
1	0.919	.3	.5
1	0.895	.1	.3
1	0.857	.1	.3
1	0.838	.3	.5
1	0.833	Bridge	
1	0.829	.3	.5
1	0.766	.1	.3
1	0.686	.1	.3
1	0.586	.1	.3
1	0.505	.3	.5
1	0.493	.3	.5
1	0.476	.1	.3
1	0.450	.1	.3
1	0.429	.1	.3



APPENDIX E:

Proposed Conditions HEC-RAS Model

HEC-RAS Plan: Prop River: Rocky Fork Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	887.50	100-year	2760.00	957.90	970.03		970.05	0.000068	1.07	2927.87	580.51	0.07
1	887.50	FW	2760.00	957.90	970.02		970.06	0.000113	1.60	1944.78	323.52	0.10
1	887.50	10-year	1220.00	957.90	967.12		967.13	0.000095	0.92	1378.06	420.52	0.08
1	887.50	50-year	2210.00	957.90	969.25		969.26	0.000069	1.00	2479.03	560.46	0.07
1	887.50	500-year	4520.00	957.90	972.34		972.36	0.000061	1.22	4329.66	636.29	0.07
1	886.69	100-year	2760.00	958.40	969.61	962.12	969.99	0.000876	5.51	905.25	551.77	0.29
1	886.69	FW	2760.00	958.40	969.61	962.12	969.99	0.000877	5.51	905.15	551.75	0.29
1	886.69	10-year	1220.00	958.40	967.04	960.56	967.11	0.000178	2.09	586.83	94.88	0.13
1	886.69	50-year	2210.00	958.40	969.09	961.60	969.23	0.000288	3.06	725.57	478.56	0.17
1	886.69	500-year	4520.00	958.40	972.25	963.56	972.34	0.000269	3.51	2748.78	814.68	0.17
1	886.6		Bridge									
1	886.51	100-year	2760.00	958.40	969.40		969.70	0.000616	4.56	789.57	522.47	0.24
1	886.51	FW	2760.00	958.40	969.40		969.70	0.000616	4.56	789.55	522.46	0.24
1	886.51	10-year	1220.00	958.40	966.93		967.01	0.000190	2.14	571.31	94.51	0.13
1	886.51	50-year	2210.00	958.40	968.70		968.86	0.000334	3.21	689.52	409.79	0.18
1	886.51	500-year	4520.00	958.40	972.21	963.61	972.31	0.000277	3.56	2713.23	812.33	0.17
1	886.4	100-year	2760.00	961.00	968.49		969.49	0.004357	8.61	434.78	351.04	0.58
1	886.4	FW	2760.00	961.00	968.49		969.49	0.004357	8.61	434.78	351.04	0.58
1	886.4	10-year	1220.00	961.00	966.43		966.91	0.003193	5.79	269.03	287.14	0.47
1	886.4	50-year	2210.00	961.00	967.91		968.71	0.003861	7.64	387.25	337.79	0.54
1	886.4	500-year	4520.00	961.00	969.36	968.46	971.97	0.009049	13.45	559.47	367.70	0.86
1	886.3	100-year	2760.00	960.30	967.40		968.18	0.003528	7.70	548.41	248.75	0.52
1	886.3	FW	2760.00	960.30	967.40		968.18	0.003528	7.70	548.44	248.76	0.52
1	886.3	10-year	1220.00	960.30	965.65		966.02	0.002285	5.07	307.99	209.76	0.40
1	886.3	50-year	2210.00	960.30	966.87		967.55	0.003254	7.00	435.72	233.00	0.50
1	886.3	500-year	4520.00	960.30	968.83		969.57	0.003082	8.19	915.56	264.32	0.51
1	886.2	100-year	2760.00	960.05	965.95		966.37	0.003483	6.67	889.08	259.47	0.51
1	886.2	FW	2760.00	960.05	965.96		966.37	0.003481	6.67	889.27	259.48	0.51
1	886.2	10-year	1220.00	960.05	964.38		964.66	0.003242	5.11	490.84	244.78	0.46
1	886.2	50-year	2210.00	960.05	965.46		965.83	0.003409	6.19	761.75	255.19	0.49
1	886.2	500-year	4520.00	960.05	967.53		968.01	0.003153	7.54	1308.66	273.42	0.50
1	886.1	100-year	2760.00	958.50	964.81		965.15	0.002750	6.16	1023.82	342.46	0.45
1	886.1	FW	2760.00	958.50	964.81		965.15	0.002743	6.15	1024.90	342.77	0.45
1	886.1	10-year	1220.00	958.50	963.36		963.57	0.002195	4.52	589.76	285.51	0.39
1	886.1	50-year	2210.00	958.50	964.32		964.63	0.002670	5.72	869.93	294.06	0.44
1	886.1	500-year	4520.00	958.50	966.75		967.04	0.001871	6.18	1789.34	428.21	0.39
1	886	100-year	2760.00	956.20	963.67		963.81	0.001274	4.83	1831.82	575.03	0.32
1	886	FW	2760.00	956.20	963.68		963.82	0.001256	4.81	1841.29	575.30	0.32
1	886	10-year	1220.00	956.20	961.59		961.86	0.002341	5.22	709.53	479.65	0.41
1	886	50-year	2210.00	956.20	962.95		963.12	0.001601	5.05	1423.81	561.73	0.35
1	886	500-year	4520.00	956.20	966.23		966.31	0.000600	4.07	3353.25	609.46	0.23
1	885.2	100-year	2760.00	954.20	963.05		963.19	0.000894	4.42	1734.71	409.83	0.27
1	885.2	FW	2760.00	954.20	963.08		963.21	0.000879	4.39	1745.49	410.07	0.27
1	885.2	10-year	1220.00	954.20	960.69		960.86	0.001202	4.10	799.41	381.47	0.30
1	885.2	50-year	2210.00	954.20	962.23		962.38	0.001016	4.39	1401.52	401.04	0.28
1	885.2	500-year	4520.00	954.20	965.84		965.96	0.000609	4.42	2969.37	510.64	0.23
1	885.1	100-year	2760.00	953.60	962.75		962.83	0.000556	3.48	2053.79	419.76	0.21
1	885.1	FW	2760.00	953.60	962.78		962.86	0.000545	3.46	2067.12	420.04	0.21
1	885.1	10-year	1220.00	953.60	960.34		960.42	0.000626	2.95	1071.70	394.34	0.21
1	885.1	50-year	2210.00	953.60	961.90		961.98	0.000606	3.39	1699.25	412.08	0.22
1	885.1	500-year	4520.00	953.60	965.63		965.71	0.000392	3.57	3311.43	472.35	0.19
1	884	100-year	2760.00	953.30	962.40		962.53	0.000800	4.25	1734.86	402.61	0.26
1	884	FW	2760.00	953.30	962.43		962.57	0.000780	4.22	1750.90	403.23	0.25
1	884	10-year	1220.00	953.30	959.85		960.02	0.001149	4.02	753.90	363.69	0.29
1	884	50-year	2210.00	953.30	961.49		961.64	0.000938	4.27	1374.91	390.03	0.27
1	884	500-year	4520.00	953.30	965.42		965.52	0.000476	4.02	3023.80	450.00	0.21
1	883.7	100-year	2760.00	952.90	962.22		962.33	0.000618	3.83	1974.38	459.63	0.23
1	883.7	FW	2760.00	952.90	962.26		962.37	0.000602	3.79	1994.91	460.59	0.23
1	883.7	10-year	1220.00	952.90	959.62		959.73	0.000761	3.36	885.85	358.05	0.24
1	883.7	50-year	2210.00	952.90	961.27		961.40	0.000728	3.85	1551.10	436.29	0.24
1	883.7	500-year	4520.00	952.90	965.31		965.40	0.000385	3.70	3526.83	576.64	0.19
1	883.6	100-year	2760.00	952.60	961.54		961.95	0.001789	6.33	967.80	249.31	0.39
1	883.6	FW	2760.00	952.60	961.61		962.01	0.001719	6.24	984.38	250.53	0.38
1	883.6	10-year	1220.00	952.60	958.92		959.29	0.002090	5.33	382.28	142.12	0.39
1	883.6	50-year	2210.00	952.60	960.47		960.94	0.002248	6.48	713.13	229.92	0.42

HEC-RAS Plan: Prop River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	883.6	500-year	4520.00	952.60	964.87		965.17	0.001017	5.96	1885.51	312.80	0.31
1	883.5	100-year	2760.00	952.50	961.17	958.00	961.72	0.002286	5.92	468.46	311.03	0.41
1	883.5	FW	2760.00	952.50	961.25	958.00	961.78	0.002201	5.85	474.50	320.44	0.40
1	883.5	10-year	1220.00	952.50	958.79	956.05	959.05	0.001681	4.07	299.98	65.73	0.34
1	883.5	50-year	2210.00	952.50	960.20	957.40	960.69	0.002472	5.57	396.80	151.58	0.42
1	883.5	500-year	4520.00	952.50	964.81	959.57	965.06	0.000776	4.63	2007.99	923.09	0.26
1	883.45		Bridge									
1	883.4	100-year	2760.00	952.50	960.63		961.31	0.002840	6.64	426.73	323.04	0.47
1	883.4	FW	2760.00	952.50	960.68		961.35	0.002757	6.58	430.84	328.51	0.46
1	883.4	10-year	1220.00	952.50	958.66		958.95	0.001944	4.28	287.19	206.62	0.36
1	883.4	50-year	2210.00	952.50	960.00		960.54	0.002597	5.92	380.05	260.77	0.44
1	883.4	500-year	4520.00	952.50	962.17		963.33	0.003644	8.70	540.88	399.63	0.55
1	883.3	100-year	2760.00	952.40	960.62		960.91	0.001512	5.56	1092.36	261.54	0.35
1	883.3	FW	2760.00	952.40	960.68		960.96	0.001459	5.49	1107.11	262.00	0.35
1	883.3	10-year	1220.00	952.40	958.55		958.74	0.001283	4.16	600.50	235.59	0.31
1	883.3	50-year	2210.00	952.40	959.94		960.20	0.001485	5.18	927.56	256.27	0.34
1	883.3	500-year	4520.00	952.40	962.32		962.70	0.001662	6.65	1514.74	275.45	0.38
1	883.2	100-year	2760.00	952.20	960.36		960.55	0.001114	4.59	1368.01	312.74	0.30
1	883.2	FW	2760.00	952.20	960.43		960.61	0.001066	4.52	1390.52	313.71	0.29
1	883.2	10-year	1220.00	952.20	958.30		958.43	0.001020	3.53	747.10	290.99	0.27
1	883.2	50-year	2210.00	952.20	959.68		959.85	0.001112	4.30	1157.49	304.61	0.29
1	883.2	500-year	4520.00	952.20	962.06		962.30	0.001188	5.44	1915.66	329.72	0.32
1	883.1	100-year	2760.00	951.80	959.77		960.04	0.001491	5.33	1134.41	280.29	0.35
1	883.1	FW	2760.00	951.80	959.87		960.13	0.001396	5.21	1164.42	281.62	0.34
1	883.1	10-year	1220.00	951.80	957.81		957.99	0.001222	3.93	615.48	242.96	0.30
1	883.1	50-year	2210.00	951.80	959.08		959.34	0.001498	5.01	946.12	271.84	0.34
1	883.1	500-year	4520.00	951.80	961.39		961.75	0.001654	6.41	1607.60	311.49	0.38
1	883	100-year	2760.00	951.40	959.18		959.43	0.001493	5.20	1216.29	315.34	0.34
1	883	FW	2760.00	951.40	959.34		959.57	0.001339	5.00	1268.34	316.83	0.32
1	883	10-year	1220.00	951.40	957.23		957.43	0.001446	4.14	616.58	299.85	0.32
1	883	50-year	2210.00	951.40	958.45		958.70	0.001619	5.04	989.03	309.88	0.35
1	883	500-year	4520.00	951.40	960.79		961.09	0.001550	6.06	1736.68	332.51	0.36
1	882	100-year	2760.00	951.10	958.52		958.68	0.001142	4.47	1724.90	569.67	0.30
1	882	FW	2760.00	951.10	958.80		958.93	0.000921	4.12	1887.37	584.89	0.27
1	882	10-year	1220.00	951.10	956.08		956.36	0.002443	4.86	497.11	420.50	0.41
1	882	50-year	2210.00	951.10	957.55		957.77	0.001686	4.90	1196.01	519.62	0.36
1	882	500-year	4520.00	951.10	960.25		960.40	0.000931	4.70	2805.97	683.09	0.28
1	881.9	100-year	2760.00	949.50	958.08		958.28	0.000941	4.05	1101.57	819.25	0.27
1	881.9	FW	2760.00	949.50	958.42		958.60	0.000790	3.84	1178.82	224.26	0.25
1	881.9	10-year	1220.00	949.50	955.51		955.67	0.001231	3.38	525.85	765.69	0.29
1	881.9	50-year	2210.00	949.50	957.02		957.23	0.001180	4.05	863.56	797.23	0.30
1	881.9	500-year	4520.00	949.50	959.70		960.00	0.001105	5.06	1465.17	848.67	0.31
1	881.8	100-year	2760.00	949.40	957.54		958.11	0.001432	6.44	480.15	76.62	0.40
1	881.8	FW	2760.00	949.40	957.85		958.45	0.001363	6.45	466.72	60.00	0.39
1	881.8	10-year	1220.00	949.40	955.30		955.55	0.000923	4.16	319.24	67.06	0.30
1	881.8	50-year	2210.00	949.40	956.54		957.05	0.001498	6.03	405.65	72.35	0.40
1	881.8	500-year	4520.00	949.40	958.61		959.74	0.002408	9.08	564.97	81.23	0.53
1	881.7	100-year	2760.00	949.20	957.36		957.93	0.001376	6.30	483.56	75.82	0.39
1	881.7	FW	2760.00	949.20	957.69		958.27	0.001303	6.30	470.75	60.00	0.38
1	881.7	10-year	1220.00	949.20	955.19		955.43	0.000841	3.99	328.42	67.18	0.29
1	881.7	50-year	2210.00	949.20	956.35		956.85	0.001439	5.89	409.12	71.84	0.39
1	881.7	500-year	4520.00	949.20	958.24		959.41	0.002518	9.13	551.69	79.28	0.54
1	881.6	100-year	2760.00	949.00	956.96		957.51	0.002377	6.94	729.18	445.47	0.44
1	881.6	FW	2760.00	949.00	957.36		957.86	0.002008	6.60	710.54	117.00	0.41
1	881.6	10-year	1220.00	949.00	954.87		955.15	0.001679	4.71	426.10	129.68	0.35
1	881.6	50-year	2210.00	949.00	955.79		956.37	0.002962	6.93	552.38	283.99	0.48
1	881.6	500-year	4520.00	949.00	957.08		958.49	0.005997	11.13	748.20	452.16	0.71
1	881.5	100-year	2760.00	948.00	957.14		957.17	0.000259	2.30	4020.18	1420.55	0.14
1	881.5	FW	2760.00	948.00	957.28		957.41	0.000646	3.67	1573.57	290.41	0.23
1	881.5	10-year	1220.00	948.00	954.74		954.80	0.000528	2.57	1075.29	1234.46	0.19
1	881.5	50-year	2210.00	948.00	955.75		955.83	0.000653	3.20	2076.67	1366.42	0.22
1	881.5	500-year	4520.00	948.00	957.67		957.73	0.000446	3.15	4784.43	1427.82	0.19
1	881.1	100-year	2760.00	946.50	956.97		956.99	0.000155	2.05	4340.24	1021.68	0.12
1	881.1	FW	2760.00	946.50	957.06		957.10	0.000194	2.30	3005.37	475.00	0.13

HEC-RAS Plan: Prop River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	881.1	10-year	1220.00	946.50	954.57		954.58	0.000132	1.56	2255.86	668.76	0.10
1	881.1	50-year	2210.00	946.50	955.44		955.48	0.000258	2.35	2879.61	810.18	0.15
1	881.1	500-year	4520.00	946.50	957.34		957.39	0.000334	3.08	4721.94	1042.33	0.17
1	880.66	100-year	2760.00	946.20	956.92		956.93	0.000053	1.19	7295.50	1647.70	0.07
1	880.66	FW	2760.00	946.20	956.92		956.96	0.000175	2.16	2644.61	433.00	0.12
1	880.66	10-year	1220.00	946.20	954.51		954.52	0.000060	1.04	3619.14	1397.23	0.07
1	880.66	50-year	2210.00	946.20	955.35		955.36	0.000099	1.44	4827.15	1488.85	0.09
1	880.66	500-year	4520.00	946.20	957.23		957.24	0.000119	1.82	7807.19	1672.69	0.10
1	880.65	100-year	2760.00	946.20	956.92		956.92	0.000031	0.95	5966.41	891.76	0.05
1	880.65	FW	2760.00	946.20	956.94		956.95	0.000031	0.95	5989.60	891.76	0.05
1	880.65	10-year	1220.00	946.20	954.51		954.51	0.000023	0.68	3822.19	887.32	0.04
1	880.65	50-year	2210.00	946.20	955.35		955.35	0.000045	1.02	4567.05	891.76	0.06
1	880.65	500-year	4520.00	946.20	957.22		957.24	0.000073	1.49	6239.10	891.76	0.08
1	880.64	100-year	2760.00	946.15	956.91		956.92	0.000035	1.03	5696.13	835.92	0.06
1	880.64	FW	2760.00	946.15	956.94		956.95	0.000034	1.02	5717.91	835.92	0.06
1	880.64	10-year	1220.00	946.15	954.51		954.51	0.000024	0.72	3686.81	832.31	0.05
1	880.64	50-year	2210.00	946.15	955.34		955.35	0.000049	1.09	4383.78	835.92	0.07
1	880.64	500-year	4520.00	946.15	957.22		957.23	0.000082	1.60	5948.93	835.92	0.09
1	880.62	100-year	2760.00	946.10	956.91		956.92	0.000038	1.01	5324.90	797.92	0.06
1	880.62	FW	2760.00	946.10	956.93		956.94	0.000038	1.00	5345.75	797.92	0.06
1	880.62	10-year	1220.00	946.10	954.51		954.51	0.000026	0.69	3408.33	795.29	0.05
1	880.62	50-year	2210.00	946.10	955.34		955.35	0.000053	1.05	4070.95	797.92	0.07
1	880.62	500-year	4520.00	946.10	957.20		957.22	0.000090	1.58	5560.28	797.92	0.09
1	880.61	100-year	2760.00	945.00	956.91		956.91	0.000034	0.99	5346.53	789.81	0.06
1	880.61	FW	2760.00	945.00	956.93		956.94	0.000033	0.98	5367.16	789.81	0.06
1	880.61	10-year	1220.00	945.00	954.50		954.51	0.000022	0.67	3450.25	787.84	0.04
1	880.61	50-year	2210.00	945.00	955.33		955.34	0.000046	1.03	4104.45	789.81	0.06
1	880.61	500-year	4520.00	945.00	957.20		957.22	0.000080	1.55	5575.84	789.81	0.09
1	880.40	100-year	2760.00	945.00	956.90	949.63	956.91	0.000033	1.03	6017.21	1040.95	0.06
1	880.40	FW	2760.00	945.00	956.92	949.63	956.93	0.000060	1.38	3010.81	370.95	0.07
1	880.40	10-year	1220.00	945.00	954.50	948.46	954.50	0.000026	0.76	3517.78	1038.32	0.05
1	880.40	50-year	2210.00	945.00	955.33	949.27	955.34	0.000050	1.13	4377.19	1040.95	0.07
1	880.40	500-year	4520.00	945.00	957.19	950.56	957.21	0.000078	1.61	6314.99	1040.95	0.09
1	880.30		Bridge									
1	880.20	100-year	2760.00	944.50	956.88		956.89	0.000033	1.13	4297.70	882.72	0.06
1	880.20	FW	2760.00	944.50	956.88		956.90	0.000057	1.48	3080.80	574.00	0.07
1	880.20	10-year	1220.00	944.50	954.46		954.47	0.000048	1.17	2168.39	857.32	0.07
1	880.20	50-year	2210.00	944.50	955.27		955.28	0.000073	1.52	2876.53	882.72	0.08
1	880.20	500-year	4520.00	944.50	957.14		957.16	0.000076	1.73	4527.21	882.72	0.09
1	880.15	100-year	2760.00	944.50	951.74		952.40	0.002910	7.32	450.48	94.53	0.49
1	880.15	FW	2760.00	944.50	952.05		952.63	0.002412	6.86	477.40	574.00	0.45
1	880.15	10-year	1220.00	944.50	950.29		950.55	0.001492	4.49	322.84	83.66	0.34
1	880.15	50-year	2210.00	944.50	951.30		951.82	0.002463	6.45	410.66	90.51	0.44
1	880.15	500-year	4520.00	944.50	952.83	951.22	954.11	0.005068	10.64	794.75	690.00	0.66
1	880.1	100-year	2760.00	944.50	951.56		952.03	0.001509	4.65	716.43	274.67	0.34
1	880.1	FW	2760.00	944.50	951.94		952.32	0.001083	4.10	804.02	239.08	0.29
1	880.1	10-year	1220.00	944.50	950.10		950.35	0.001396	3.70	379.67	223.41	0.31
1	880.1	50-year	2210.00	944.50	951.11		951.50	0.001465	4.35	606.61	253.90	0.33
1	880.1	500-year	4520.00	944.50	952.91		953.34	0.001482	5.28	1236.53	532.09	0.34
1	879	100-year	2760.00	942.90	951.06		951.26	0.001111	4.22	1544.25	738.28	0.32
1	879	FW	2760.00	942.90	951.64		951.78	0.000716	3.63	1729.22	584.48	0.26
1	879	10-year	1220.00	942.90	949.50		949.65	0.001108	3.33	623.26	464.96	0.30
1	879	50-year	2210.00	942.90	950.55		950.75	0.001160	4.03	1190.97	639.51	0.32
1	879	500-year	4520.00	942.90	952.48		952.66	0.000898	4.44	2636.13	790.45	0.30
1	878	100-year	2760.00	942.40	950.74		950.77	0.000290	2.05	3436.92	1477.90	0.16
1	878	FW	2760.00	942.40	951.27		951.33	0.000363	2.46	2550.25	761.37	0.19
1	878	10-year	1220.00	942.40	948.91		948.96	0.000560	2.08	927.80	775.94	0.21
1	878	50-year	2210.00	942.40	950.15		950.19	0.000361	2.10	2575.07	1440.45	0.18
1	878	500-year	4520.00	942.40	952.26		952.28	0.000213	2.11	5798.14	1664.47	0.15
1	877.5	100-year	2760.00	941.80	950.61		950.64	0.000205	2.30	4393.79	1523.72	0.15
1	877.5	FW	2760.00	941.80	951.01		951.10	0.000442	3.49	2448.41	629.00	0.22
1	877.5	10-year	1220.00	941.80	948.67		948.72	0.000323	2.38	1654.16	1251.61	0.17
1	877.5	50-year	2210.00	941.80	950.00		950.03	0.000235	2.33	3471.15	1467.12	0.15
1	877.5	500-year	4520.00	941.80	952.16		952.18	0.000170	2.37	6857.20	1649.60	0.14

HEC-RAS Plan: Prop River: Rocky Fork Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	877.2	100-year	3990.00	941.30	950.37		950.46	0.000671	3.91	2864.40	1131.03	0.26
1	877.2	FW	3990.00	941.30	950.78		950.86	0.000564	3.72	2701.82	767.71	0.24
1	877.2	10-year	1770.00	941.30	948.37		948.46	0.000776	3.35	1101.41	741.44	0.27
1	877.2	50-year	3190.00	941.30	949.74		949.83	0.000700	3.74	2217.87	931.22	0.26
1	877.2	500-year	6540.00	941.30	951.95		952.04	0.000579	4.16	4885.06	1429.74	0.25
1	877	100-year	3990.00	940.90	949.40		949.82	0.001930	6.37	1581.01	552.50	0.44
1	877	FW	3990.00	940.90	949.55		950.21	0.002523	7.39	1063.15	331.18	0.51
1	877	10-year	1770.00	940.90	947.19		947.67	0.002831	5.84	524.97	375.36	0.50
1	877	50-year	3190.00	940.90	948.72		949.15	0.002126	6.21	1218.53	509.33	0.45
1	877	500-year	6540.00	940.90	951.03		951.47	0.001735	7.02	2578.32	663.71	0.43
1	876.5	100-year	3990.00	940.00	948.74		949.03	0.001079	4.76	1512.61	427.09	0.30
1	876.5	FW	3990.00	940.00	948.87		949.22	0.001184	5.04	1205.05	283.81	0.31
1	876.5	10-year	1770.00	940.00	946.76		946.90	0.000683	3.14	782.92	292.43	0.22
1	876.5	50-year	3190.00	940.00	948.10		948.35	0.000980	4.29	1250.03	390.70	0.28
1	876.5	500-year	6540.00	940.00	950.26		950.66	0.001307	5.88	2203.97	472.57	0.34
1	876.2	100-year	3990.00	941.00	948.08		948.37	0.002260	6.11	1640.37	619.81	0.41
1	876.2	FW	3990.00	941.00	948.34		948.57	0.001705	5.43	1521.83	359.93	0.36
1	876.2	10-year	1770.00	941.00	946.09		946.37	0.002611	5.22	733.41	373.98	0.42
1	876.2	50-year	3190.00	941.00	947.49		947.75	0.002124	5.57	1313.54	496.93	0.39
1	876.2	500-year	6540.00	941.00	949.77		949.99	0.001550	5.86	2843.32	792.13	0.35
1	876.1	100-year	3990.00	941.00	948.11		948.23	0.000937	3.93	2280.44	720.72	0.27
1	876.1	FW	3990.00	941.00	948.37		948.46	0.000684	3.44	2244.30	503.92	0.23
1	876.1	10-year	1770.00	941.00	946.13		946.21	0.000950	3.12	1123.45	481.61	0.26
1	876.1	50-year	3190.00	941.00	947.49		947.61	0.001005	3.81	1854.65	651.15	0.27
1	876.1	500-year	6540.00	941.00	949.77		949.89	0.000782	4.17	3603.40	860.99	0.26
1	876	100-year	3990.00	940.00	947.63		947.77	0.000926	3.88	2371.31	793.97	0.27
1	876	FW	3990.00	940.00	947.87		948.05	0.001010	4.15	1789.90	382.04	0.28
1	876	10-year	1770.00	940.00	945.56		945.69	0.001121	3.30	1037.72	497.56	0.28
1	876	50-year	3190.00	940.00	946.96		947.11	0.001021	3.79	1858.33	697.48	0.28
1	876	500-year	6540.00	940.00	949.40		949.53	0.000701	3.97	3840.05	847.50	0.24
1	875.9	100-year	3990.00	939.00	946.94		947.07	0.000973	4.42	2301.51	480.49	0.28
1	875.9	FW	3990.00	939.00	947.04		947.23	0.001213	4.98	1890.86	361.19	0.31
1	875.9	10-year	1770.00	939.00	944.80		944.90	0.000956	3.53	1291.35	462.24	0.26
1	875.9	50-year	3190.00	939.00	946.24		946.36	0.000976	4.16	1967.83	475.03	0.28
1	875.9	500-year	6540.00	939.00	948.76		948.92	0.001012	5.19	3198.61	502.84	0.30
1	875.8	100-year	3990.00	938.50	945.36		946.19	0.004156	7.98	795.20	217.64	0.57
1	875.8	FW	3990.00	938.50	945.35		946.21	0.004296	8.10	740.14	180.86	0.58
1	875.8	10-year	1770.00	938.50	943.78		944.17	0.002656	5.24	474.17	187.97	0.43
1	875.8	50-year	3190.00	938.50	944.81		945.51	0.003858	7.22	677.80	207.82	0.54
1	875.8	500-year	6540.00	938.50	946.73		947.95	0.004961	9.97	1106.22	231.58	0.64
1	874	100-year	3990.00	937.90	944.75		944.85	0.000651	3.78	2031.47	573.38	0.26
1	874	FW	3990.00	937.90	944.75		944.85	0.000651	3.78	2031.47	573.38	0.26
1	874	10-year	1770.00	937.90	942.43		942.58	0.001310	4.02	843.00	454.63	0.34
1	874	50-year	3190.00	937.90	943.97		944.08	0.000783	3.82	1606.89	522.44	0.28
1	874	500-year	6540.00	937.90	946.49		946.60	0.000535	4.01	3096.20	631.02	0.24
1	873.9	100-year	3990.00	936.90	942.56	942.56	944.40	0.009241	12.29	457.55	144.34	0.94
1	873.9	FW	3990.00	936.90	942.56	942.56	944.40	0.009241	12.29	457.55	144.34	0.94
1	873.9	10-year	1770.00	936.90	940.85	940.85	942.01	0.008711	9.23	245.48	111.07	0.85
1	873.9	50-year	3190.00	936.90	941.97	941.97	943.60	0.009384	11.44	377.02	125.85	0.93
1	873.9	500-year	6540.00	936.90	944.13	944.13	946.17	0.007975	13.56	705.44	162.49	0.91
1	873	100-year	3990.00	930.40	939.37	935.12	939.42	0.000190	1.89	2277.53	475.79	0.14
1	873	FW	3990.00	930.40	939.50	935.12	939.55	0.000176	1.84	2339.65	479.98	0.13
1	873	10-year	1770.00	930.40	936.56	934.35	936.60	0.000366	1.68	1067.77	385.25	0.17
1	873	50-year	3190.00	930.40	938.35	934.85	938.40	0.000239	1.86	1808.98	442.92	0.15
1	873	500-year	6540.00	930.40	943.35	935.77	943.39	0.000079	1.72	4440.56	618.59	0.10

HEC-RAS HEC-RAS 6.1.0 September 2021  
U.S. Army Corps of Engineers  
Hydrologic Engineering Center  
609 Second Street  
Davis, California

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X      X  XXXXXX   XXXX       XXXX       XX       XXXX
X      X  X       X   X       X  X       X  X       X
X      X  X       X       X       X  X       X  X       X
XXXXXXXX XXXX     X       XXX  XXXX     XXXXXX     XXXX
X      X  X       X       X       X  X       X  X       X
X      X  X       X   X       X  X       X  X       X
X      X  XXXXXX   XXXX       X  X       X  X       XXXXX
```

PROJECT DATA

Project Title: 20220861  
Project File : 20220861.prj  
Run Date and Time: 2/17/2023 10:28:31 AM

Project in English units

Project Description:

ROCKY FORK TRIB OF BIG WALNUT  
ROCKY FORK SECTIONS 850 THRU 891.5

ROCKY FORK FIS RUN 5

PLAN DATA

Plan Title: Proposed Conditions FEMA Flows Comp 7  
Plan File : j:\20220861\Reports\Floodplain\Modeling\20220861.p05

Geometry Title: Proposed Conditions MKSK Comparison 7  
Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g05

Flow Title : FEMA Flow Rates  
Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f02

Plan Description:

Sugar Run and Rocky Fork Models  
Re-coded Using 2011 1-ft Auditors

topo  
 Bridges modeled mostly from record plans  
 Flow Rates from FEMA for Rocky  
 Fork  
 Flow Rates from FEMA for Sugar Run

Proposed conditions for MKSK park  
 at the old farmstead

Plan Summary Information:

Number of:	Cross Sections = 116	Multiple Openings = 0
	Culverts = 3	Inline Structures = 0
	Bridges = 5	Lateral Structures = 1

Computational Information

Water surface calculation tolerance	= 0.01
Critical depth calculation tolerance	= 0.01
Maximum number of iterations	= 20
Maximum difference tolerance	= 0.3
Flow tolerance factor	= 0.001

Computation Options

Critical depth computed only where necessary	
Conveyance Calculation Method:	At breaks in n values only
Friction Slope Method:	Average Conveyance
Computational Flow Regime:	Subcritical Flow

Encroachment Data

Equal Conveyance	= True
Left Offset	= 0
Right Offset	= 0

River = Rocky Fork	Reach = 1		
RS	Profile	Method	Value1 Value2
887.50	FW	1	1486.15 1809.67
881.9	FW	1	-108.94 115.32
881.8	FW	1	-30 30
881.7	FW	1	-30 30
881.6	FW	1	-85 32
881.5	FW	1	-40.41 250
881.1	FW	1	-300 175
880.66	FW	1	-300 133
880.40	FW	1	-250 140.22
880.20	FW	1	-44 530
880.15	FW	1	-44 530
880.1	FW	1	-146.2 92.88
879	FW	1	-334.48 250
878	FW	1	-648.94 112.43
877.5	FW	1	-468.31 160.69

877.2	FW	1	-737.27	30.44
877	FW	1	-186.55	176.69
876.5	FW	1	-179.67	104.14
876.2	FW	1	-258.19	225
876.1	FW	1	-188.92	315
876	FW	1	-32.04	350
875.9	FW	1	-174.57	186.62
875.8	FW	1	-55.09	125.77

FLOW DATA

Flow Title: FEMA Flow Rates

Flow File : j:\20220861\Reports\Floodplain\Modeling\20220861.f02

Flow Data (cfs)

River	Reach	RS	100-year	FW
10-year	50-year	500-year		
Rocky Fork	1	887.50	2760	2760
1220	2210	4520		
Rocky Fork	1	877.2	3990	3990
1770	3190	6540		
Sugar Run	1	3.553	1050	1050
766	910	1280		
Sugar Run	1	2.417	1620	1620
954	1400	1990		
Sugar Run	1	2.061	2240	2240
960	1170	3700		
Sugar Run	1	0.857	1580	1580
883	1433	1902		
Sugar Run	1	0.838	1398	1398
883	1324	1528		
Sugar Run	1	0.766	1580	1580
883	1433	1902		

Boundary Conditions

River	Reach	Profile	Upstream
Downstream			
Rocky Fork	1	100-year	
Known WS = 939.37			



Rocky Fork	1	FW
Known WS =	939.5	
Rocky Fork	1	10-year
Known WS =	936.56	
Rocky Fork	1	50-year
Known WS =	938.35	
Rocky Fork	1	500-year
Known WS =	943.35	
Sugar Run	1	100-year
Known WS =	950.37	
Sugar Run	1	FW
Known WS =	950.37	
Sugar Run	1	10-year
Known WS =	948.37	
Sugar Run	1	50-year
Known WS =	949.74	
Sugar Run	1	500-year
Known WS =	951.95	

Changes in WS and EG

River	Reach	RS	Profile	Type	Value
Rocky Fork	1	880.20	500-year	Known WS	957.14
Rocky Fork	1	880.20	50-year	Known WS	955.27
Rocky Fork	1	880.20	10-year	Known WS	954.46
Rocky Fork	1	880.20	FW	Known WS	956.88
Rocky Fork	1	880.20	100-year	Known WS	956.88

GEOMETRY DATA

Geometry Title: Proposed Conditions MKSK Comparison 7  
 Geometry File : j:\20220861\Reports\Floodplain\Modeling\20220861.g05

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 887.50

INPUT

Description: FEMA Section AH - Upstream Tie-in Section  
 elevations dropped by  
                   0.60 feet to convert from 1929 datum to 1988 datum  
 center of  
                   channel station 1650  
 Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	987.4	23	987.4	46	987.4	100	987.4	300	987.4
364	987.4	449	986.4	538	986.4	681	982.4	885	980.4
1085	978.4	1085	998.4	1151	998.4	1151	978.4	1223	975.4
1239	975.4	1291	969.4	1352	965.4	1460	964.2	1526	963.4
1619	963.4	1637	961.4	1644	957.9	1660	957.9	1667	961.4
1700	964.4	1751	967.4	1811	967.4	1826	967.4	1850	969
1965	976.4	2150	983.4	2356	984.4	2519	985.4	2640	983.4
2730	983.4	2902	987.4	3143	993.4	3314	995.4	3396	993.4
3579	993.4	3761	995.4	3965	997.4				

Manning's n Values		num=		5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.05	1352	.055	1526	.035	1700	.055	1850	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	1352	1700		132.72	132.72		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 886.69

INPUT

Description: upstream side of central college

Station Elevation Data		num=		27					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18	18		42.9	42.9		.3	.5

Ineffective Flow		num=		2	
Sta L	Sta R	Elev	Permanent		
-440.99	-33.98	969.18	T		
33.98	431.38	969.43	T		

BRIDGE

RIVER: Rocky Fork

REACH: 1

RS: 886.6

INPUT

Description: central college road bridge at 30° skew, distances adjusted by hand to account for skew. Data taken from record plan and converted from 1929 datum to 1988 datum by lowering elevations by 0.60-feet

Distance from Upstream XS = 1
Deck/Roadway Width = 40.9
Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 27

Table with 4 columns: Sta, Hi, Cord, Lo Cord. It lists 27 coordinate points for the upstream deck/roadway.

Upstream Bridge Cross Section Data

Station Elevation Data num= 27

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. It lists station and elevation data for the upstream bridge cross section.

Manning's n Values num= 3

Table with 6 columns: Sta, n Val, Sta, n Val, Sta, n Val. It lists Manning's n values for different stations.

Bank Sta: Left Right Coeff Contr. Expan.
-18 18 .3 .5

Ineffective Flow num= 2

Table with 4 columns: Sta L, Sta R, Elev, Permanent. It lists ineffective flow data for two stations.

Downstream Deck/Roadway Coordinates

num= 27

Table with 4 columns: Sta, Hi, Cord, Lo Cord. It lists 27 coordinate points for the downstream deck/roadway.

-32.98	969.56		-32.98	969.56	968.06	-20.13	969.56	968.06
0	969.57	968.06	4.87	969.57	968.06	29.87	969.58	968.06
32.98	969.58	968.06	32.98	969.58		54.87	969.59	
104.87	969.43		154.87	969.47		204.87	969.93	
254.87	970.67		277.87	970.95		304.87	971.27	
338.55	972		393.01	973		431.38	974	

Downstream Bridge Cross Section Data

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta: Left Right Coeff Contr. Expan.

-18	18	.1	.3
-----	----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-440.99	-33.48	969.18	T
33.48	431.38	969.43	T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Abutments = 2

Abutment Data

Upstream num= 3

Sta	Elev	Sta	Elev	Sta	Elev
-32.98	966.5	-17.98	959	-16.78	958.4

Downstream num= 3

Sta	Elev	Sta	Elev	Sta	Elev
-32.98	966.5	-17.98	959	-16.78	958.4

Abutment Data

Upstream num= 2

Sta	Elev	Sta	Elev
17.98	959	32.98	966.5

Downstream num= 2  
Sta Elev Sta Elev  
17.98 959 32.98 966.5

Number of Piers = 2

Pier Data

Pier Station Upstream= -11.58 Downstream= -11.58  
Upstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5  
Downstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5

Pier Data

Pier Station Upstream= 11.58 Downstream= 11.58  
Upstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5  
Downstream num= 4  
Width Elev Width Elev Width Elev Width Elev  
1.167 955 1.167 964.54 3 964.54 3 968.5

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
Momentum Cd = 1.2  
Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow  
Submerged Inlet Cd =  
Submerged Inlet + Outlet Cd = .8  
Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 886.51

INPUT

Description: downstream side of central college road bridge

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-440.99	973	-402.95	972	-370.77	971	-330.05	970	-245.13	968.84
-195.13	968.38	-145.13	968.22	-95.13	968.18	-45.13	968.55	-32.98	958.4
-20.13	958.4	-18	958.4	0	958.4	4.87	958.4	18	958.4
29.87	958.4	32.98	958.4	54.87	968.59	104.87	968.43	154.87	968.47
204.87	968.93	254.87	969.67	277.87	969.95	304.87	970.27	338.55	971
393.01	972	431.38	973						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-440.99	.04	-18	.04	18	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-18	18	75	103.76	132	.1	.3
-----	----	----	--------	-----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-440.99	-33.48	969.18	T
33.48	431.38	969.43	T

CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 886.4

INPUT

Description:

Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-344.42	970	-331.77	969	-312.17	968	-287.05	967	-245.05	966
-233.16	965	-161.52	964	-141.31	963.8	-64.59	963.8	-56.45	964
-39.8	964.4	-23.41	964	-17.64	963	-14.04	962	-10.45	961
12.46	961	14.04	962	15.61	963	17.33	964	20.44	965
22.66	966	25.34	967	28.03	968	30.65	969	32.62	970

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-344.42	.1	-23.41	.04	17.33	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-23.41	17.33	330	320.04	300	.1	.3
--------	-------	-----	--------	-----	----	----

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-344.42	-54.16	969.18	T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 886.3

INPUT

Description:

Station Elevation Data		num= 22							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-62.31	969	-53.57	968	-44.83	967	-32.22	966	-22.44	965
-19.34	964	-17.68	963	-15.31	961	-12	960.3	12	960.3
21.51	961	24.47	962	27.39	963	59.45	964	64.86	965
68.06	966	72.34	967	81.44	967	85.12	965	196.94	965
201.35	968	203.96	969						

Manning's n Values		num= 4					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-62.31	.1	-17.68	.04	27.39	.1	64.86	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.68	27.39		555	514.42	410	.1	.3

Ineffective Flow		num= 1			
Sta L	Sta R	Elev	Permanent		
72.34	203.96	967	T		

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 886.2

INPUT

Description:

Station Elevation Data		num= 20							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-33.39	968	-30.95	967	-28.52	966	-26.02	965	-17.83	962
-15.08	961	-12	960.05	12	960.05	14.23	961	25.33	962
52.11	963	65.51	963.2	82.03	963	148.25	962.2	205.53	963
217.61	964	225.19	965	231.35	966	237.47	967	244.46	968

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-33.39	.1	-17.83	.04	25.33	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.83	25.33		457	445.2	315	.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 886.1

INPUT

Description:

Station Elevation Data										num=	47
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-280.14	967	-267.67	966	-248.37	965	-215.92	964.3	-181.12	965		
-159.77	966	-146.94	967	-134.32	968	-121.67	969	-110.01	970		
-100.71	971	-76.43	972	-69.91	972	-40.54	971	-35.53	970		
-33.54	969	-31.89	968	-30.49	967	-29.09	966	-27.7	965		
-26.31	964	-24.6	963	-22.45	962	-18.94	961	-15.98	960		
-13.02	959	-10	958.5	10	958.5	13.29	959	18.49	960		
23.64	961	31.14	961.1	39.58	961	49.98	960	55.6	959.6		
61.12	960	72.5	961	118.83	962	136.63	962	163.79	961.8		
191.72	962	220.78	962	258.22	963	264.08	964	266.72	965		
269.22	966	271.75	967								

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-280.14	.1	-18.94	.04	23.64	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.94	23.64		472	828.74		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 886

INPUT

Description: Lettered Section AG

Station Elevation Data										num=	26
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-587.27	967	-577.13	966	-567.83	965	-558.25	964	-543.42	963		
-497.74	962	-452.62	961.5	-338.33	961	-274.52	960.2	-138.11	960		
-118.98	959	-96.73	960	-70.39	960.2	-43.11	960	-38.93	959		
-14.89	958	-11.11	957	-10	956.2	10	956.2	11.58	957		
13.1	958	20.72	963	22.24	964	24.69	965	29.19	966		
32.45	967										

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-587.27	.1	-14.89	.04	13.1	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-14.89	13.1		625	607.51		.1	.3

CROSS SECTION



RIVER: Rocky Fork  
REACH: 1

RS: 885.2

INPUT

Description:

Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-153.35	967	-144.68	966	-140	965	-136.44	964	-133.25	963
-128.77	962	-122.34	961	-113.7	960	-100.08	959	-73.1	958.1
-56.14	958	-46.99	957.7	-37.54	958	-19.38	959	-15.64	959
-14.6	958	-13.57	957	-12.52	956	-11.37	955	-10	954.2
9	954.2	10.89	955	14.14	956	17.42	957	32.16	957.2
44.54	957	57.09	956.7	68.41	957	73.88	958	80.86	959
90.79	959.1	100.23	959	116.57	959	135.35	960	155.23	960
257.23	960	263.82	961	269.8	962	276.11	963	282.07	964
313.5	965	376.74	966	396.53	967				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-153.35	.1	-13.57	.04	17.42	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-13.57	17.42	345	487.99	575	.1	.3
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CROSS SECTION

RIVER: Rocky Fork  
REACH: 1

RS: 885.1

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-345.92	967	-263.22	966	-215.95	965	-207.49	964	-201.59	963
-196.59	962	-190.44	961	-180.65	960	-158.95	959	-60.28	958
-42.28	957	-29.18	957.2	-18.43	957	-15.3	956	-13.17	955
-11.05	954	-10	953.6	10	953.6	12.93	954	17.09	957
18.47	958	31.01	958.2	48.59	958	105.88	957.1	128.48	957
148.08	956.8	165.61	957	186.59	958	200.87	959	209.21	960
212.51	961	216.54	962	220.39	963	223.46	964	225.36	965
227.09	966	228.75	967						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-345.92	.1	-18.43	.04	18.47	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-18.43	18.47	405	521.15	342	.1	.3
--------	-------	-----	--------	-----	----	----



-17.86	19.94		355	356.98	351		.1	.3
Ineffective Flow	num=	1						
Sta L	Sta R	Elev	Permanent					
-236.31	-86.97	958	T					

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.6

INPUT

Description:

Station Elevation Data	num=	29							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-185.7	965	-168.65	964	-154.73	963	-142.66	962	-130.27	961
-117.67	960	-101.95	959	-35.13	958.9	-26.09	958	-22.63	957
-19.88	956	-17.82	955	-15.78	954	-13.76	953	-10	952.6
7	952.6	9.27	953	11.24	954	13.23	955	29.24	956
63.87	957	87.4	958	97.07	959	103.63	960	109.31	961
114.86	962	118.54	963	123.24	964	130.27	965		

Manning's n Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val
-185.7	.1	-19.88	.04	13.23	.1

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-19.88	13.23	120	110.05	101		.1	.3

Ineffective Flow	num=	1			
Sta L	Sta R	Elev	Permanent		
107.58	130.27	962.7	T		

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 883.5

INPUT

Description: upstream side of Warner Road Bridge

Station Elevation Data	num=	36							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-598.15	965	-351.18	964	-343.86	963	-299.15	962	-268.73	961
-241.58	960	-222.74	959	-178.89	959	-177.26	960	-144.68	961
-88.76	962	-74.4	962	-59.09	961	-39.29	960	-34.1	959
-34.06	958	-30.61	957	-26.06	956	-20.07	955	-16.39	954
-12.82	953	-10	952.5	15	952.5	16.74	953	18.71	954
21.43	955	25.19	956	28.37	957	31.54	958	31.91	961
33.1	961	106.05	961	130.35	962	167.39	963	356.56	964
376.91	965								

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -598.15 .06 -39.29 .04 31.91 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -39.29 31.91 50.79 50.79 50.79 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -598.15 -40.47 962.7 T  
 40.39 376.91 962.7 T

BRIDGE

RIVER: Rocky Fork  
 REACH: 1 RS: 883.45

INPUT

Description: Warner Road Bridge  
 Built in 1980  
 Distance from Upstream XS = 6.7  
 Deck/Roadway Width = 36  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 15  

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-590.54	966				-442.57	965				-283.47	964			
-144.8	963				-97.75	962.7				-35	963.25			
-35	963.25	960.25			31.91	963.7	960.7			31.91	963.7			
65.65	964				177.58	965				281.85	966			
338.74	967				368.29	968				389.57	969			

Upstream Bridge Cross Section Data

Station Elevation Data num= 36  

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-598.15	965	-351.18	964	-343.86	963	-299.15	962	-268.73	961		
-241.58	960	-222.74	959	-178.89	959	-177.26	960	-144.68	961		
-88.76	962	-74.4	962	-59.09	961	-39.29	960	-34.1	959		
-34.06	958	-30.61	957	-26.06	956	-20.07	955	-16.39	954		
-12.82	953	-10	952.5	15	952.5	16.74	953	18.71	954		
21.43	955	25.19	956	28.37	957	31.54	958	31.91	961		
33.1	961	106.05	961	130.35	962	167.39	963	356.56	964		
376.91	965										

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -598.15 .06 -39.29 .04 31.91 .06

Bank Sta: Left Right Coeff Contr. Expan.

-39.29 31.91 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -598.15 -40.47 962.7 T  
 40.39 376.91 962.7 T

Downstream Deck/Roadway Coordinates

num= 15  
 Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord Sta Hi Cord Lo Cord  
 -590.54 966 -442.57 965 -283.47 964  
 -144.8 963 -97.75 962.7 -35 963.25  
 -35 963.25 960.25 31.91 963.7 960.7 31.91 963.7  
 65.65 964 177.58 965 281.85 966  
 338.74 967 368.29 968 389.57 969

Downstream Bridge Cross Section Data

Station Elevation Data num= 27  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -320.1 964 -300.87 963 -273.59 962 -252.24 961 -229.92 960  
 -183.24 959 -161.29 958 -34.85 958 -30.98 957 -26.41 956  
 -21.39 955 -18.52 954 -16.8 953 -15 952.5 12 952.5  
 14.14 953 15.5 954 17.37 955 21.96 956 26.19 957  
 30.61 958 30.8 959 30.92 960 107.4 961 118.7 962  
 135.16 963 161.61 964

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -320.1 .1 -34.85 .04 30.61 .1

Bank Sta: Left Right Coeff Contr. Expan.  
 -34.85 30.61 .3 .5

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -320.1 -38.79 962.7 T  
 35.41 161.61 962.7 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Highest Energy Answer

High Flow Method  
Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
Do not add Weight component to Momentum  
Class B flow critical depth computations use critical depth  
inside the bridge at the upstream end  
Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883.4

INPUT

Description: downstream side of Warner Road Bridge built in 1980

Station Elevation Data num= 27									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-320.1	964	-300.87	963	-273.59	962	-252.24	961	-229.92	960
-183.24	959	-161.29	958	-34.85	958	-30.98	957	-26.41	956
-21.39	955	-18.52	954	-16.8	953	-15	952.5	12	952.5
14.14	953	15.5	954	17.37	955	21.96	956	26.19	957
30.61	958	30.8	959	30.92	960	107.4	961	118.7	962
135.16	963	161.61	964						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-320.1	.1	-34.85	.04	30.61	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-34.85	30.61		102.12	102.12		.3	.5

Ineffective Flow num= 2			
Sta L	Sta R	Elev	Permanent
-320.1	-38.79	962.7	T
35.41	161.61	962.7	T

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883.3

INPUT

Description:

Station Elevation Data num= 33									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-190.42	965	-187.7	964	-185.12	963	-181.78	962	-178.2	961
-175.22	960	-172.74	959	-170.17	958	-165.44	957	-156.17	956

-140.97	955.9	-105.59	956	-54.52	956.5	-27.63	956	-19.64	955
-16.72	954	-14.18	953	-10	952.4	10	952.4	12.8	953
14.77	954	16.76	955	19.23	956	24.05	957	51.12	958
74.51	959	81.61	960	86.24	961	90.78	962	96.5	963
128.62	963	152.23	964	158.09	965				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-190.42	.1	-19.64	.04	16.76	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-19.64	16.76	249	261.04	250	.1	.3
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Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-190.42	-160.13	962.7	T

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883.2

INPUT  
Description:

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-113.27	964	-109.52	963	-106.02	962	-102.92	961	-100.23	960
-97.51	959	-94.82	958	-91.5	957	-76.54	956	-50.25	956.4
-20.97	956	-19.56	955	-16.74	953	-10	952.2	10	952.2
14.9	953	17.04	954	19.33	955	22.71	956	164.91	956
182.88	957	193.27	958	200.28	959	207.63	960	218.48	961
223.19	962	228.26	963	233.43	964				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-113.27	.1	-20.97	.04	22.71	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-20.97	22.71	315	419.74	383	.1	.3
--------	-------	-----	--------	-----	----	----

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883.1

INPUT  
Description:

Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

-187.63	962	-183.33	961	-177.86	960	-172.99	959	-167.32	958
-161.41	957	-153.84	956	-139.64	955	-125.39	954.9	-108.16	955
-76.33	956	-71.28	956	-19.32	955	-17.09	954	-14.96	953
-12.93	952	-10	951.8	10	951.8	14.88	952	17.43	953
19.97	954	22.54	955	26.5	956	51.14	957	82.86	958
97.8	959	105.33	960	112.17	961	149	962		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-187.63	.1	-19.32	.04	22.54	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-19.32	22.54		440 425.44	331		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 883

INPUT  
Description:

Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-73.43	963	-59.34	962	-45.63	961	-39.62	960	-35.64	959
-33.69	958	-30.44	957	-27.38	956	-24.36	955	-21.69	954
-19.82	953	-18.15	952	-10	951.4	12	951.4	14.64	952
18.19	955	39.92	955.5	64.91	955	88.16	954.8	115.42	955
142.68	955	166.65	956	267.37	957	273.03	958	283.18	960
289.52	961	299.49	962						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-73.43	.1	-24.36	.04	18.19	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-24.36	18.19		500 598.03	506		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 882

INPUT  
Description:

Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-185.06	961	-139.86	960	-90.05	959	-61.22	958	-52.76	957
-46.48	956	-41.45	955	-31.22	954	-13.7	953	-11.95	952



-8	951.1	10	951.1	15.29	952	30.48	953	49.3	954
54.89	954.1	59.58	954	66.94	954	140.57	955	185.31	956
207.34	957	222.68	958	234.97	959	245.76	960	256.15	961
266.07	962	275.05	963	283.8	964	298.41	965	319.3	965
329.94	964	337.4	963	344.3	962	351.2	961	358.04	960
364.12	959	373.08	958	384.99	957	409.02	956	591.66	956
617.95	957	630.72	958	634.72	959	642.73	961		

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -185.06 .1 -13.7 .04 30.48 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -13.7 30.48 317 391.59 386 .1 .3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.9

INPUT  
 Description:

Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-167.88	960	-142.77	959	-136.51	958	-129.97	957	-126.13	956
-121.72	955	-74.1	954.2	-45.69	954	-33.91	953	-28.16	952
-23.01	951	-12.97	950	-9	949.5	10	949.5	15.65	950
17.38	951	19.1	952	21.26	953	30.23	954	109.3	954
205.13	955	295.04	955	629.86	955	653.01	956	666.88	957
681.96	958	685.63	959	689.46	960				

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -167.88 .1 -45.69 .04 30.23 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -45.69 30.23 109.39 109.39 109.39 .1 .3

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -167.88 -108.94 960 T  
 115.32 689.46 960 T

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 881.8

INPUT

Description: upstream side of SR-161 Bypass Bridge

Station Elevation Data num= 19									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.01	960	-33.06	955	-30.9	954	-28.76	953	-26.67	952
-24.71	951	-23.08	950	-15	949.4	15	949.4	22	950
24.51	951	26.66	952	28.64	953	30.68	954	32.73	955
36.89	957	38.97	958	41.08	959	44.98	960		

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-44.01	.035	-23.08	.035	22	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.08	22		130.97	130.97		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1

RS: 881.7

INPUT

Description: downstream side of SR-161 Bypass Bridge

Station Elevation Data num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.26	960	-42.36	959	-40.45	958	-38.51	957	-36.58	956
-34.54	955	-32.55	954	-30.63	953	-28.81	952	-27.57	951
-26.45	950	-15	949.2	0	949.2	15	949.2	21.81	950
39.9	959	43.97	960						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-44.26	.035	-26.45	.035	21.81	.035

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.45	21.81		229.13	229.13		.3	.5

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1

RS: 881.6

INPUT

Description:

Station Elevation Data num= 38									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-618.83	960	-583.51	959	-558.42	958	-531.36	957	-492.3	956
-350.51	955.5	-251.83	956	-244.7	957	-233.92	958	-208.63	958
-122.4	959	-112.39	959	-101.91	958	-95.35	957	-89.57	956

-84.97	955	-79.61	954	-71.14	953	-59.21	952	-17.13	951
-12.11	949	12.83	949	16.53	950	20.29	951	24.11	952
27.93	953	34.25	954	47.11	955	55.79	956	65.83	957
75.69	958	86.76	959	96.94	960	217.07	960	232.82	959
272.02	958.5	280.28	959	284.55	960				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-618.83	.1	-17.13	.04	20.29	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-17.13 20.29 324.74 324.74 324.74 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-618.83	-112.39	959	T

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 881.5

INPUT  
Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1095.46	959	-1076.94	958	-1067.13	957	-1042.48	956	-950.75	955
-903.01	954	-896.42	953	-894	952.7	-131	952.7	-128.45	953
-122.43	954	-56.17	955	-40.41	955.1	-27.35	955	-23.6	954
-21.83	953	-14.89	949	-13.09	948	11.92	948	21.66	951
26.41	952	29.56	953	40.81	953.2	52.38	953	58.34	952
111.82	952	119.12	953	133.2	953	137.12	952	327.38	952
335.26	953	340.53	954	344.36	955	347.87	956	351.58	957
355.32	958	359.28	959						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-1095.46	.1	-21.83	.04	29.56	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-21.83 29.56 871.8 871.8 871.8 .1 .3

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
-1095.46	-40.41	955.1	T

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 881.1

INPUT

Description:

Station Elevation Data			num= 39								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-779.61	958	-730	957	-678.19	956	-399.29	955	-364.7	954		
-326.38	953	-281.65	952	-246.84	951	-217.54	950	-207.39	950		
-189.2	951	-147.68	951.2	-109.76	951	-94.67	950	-80.78	949.6		
-65.67	950	-52.1	950	-21.1	949	-17.57	948	-13.57	947		
-10	946.5	10	946.5	17.3	947	25.34	952	34	952.3		
44.34	952	49.94	951	62.45	951	66.9	952	190.26	952		
194.05	951	267.44	951	271.18	952	276.69	953	282.12	954		
286.32	955	290.06	956	293.43	957	299.73	958				

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-779.61	.1	-21.1	.04	25.34	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.1	25.34		729.81	729.81		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1 RS: 880.66

INPUT

Description:

Station Elevation Data			num= 37								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1178.48	960	-1151.16	959	-1065.71	958	-1001.87	957	-923.25	956		
-850.46	955	-803.82	954	-793.63	953	-783.44	952	-750.05	952		
-739.34	953	-144.84	953	-125.23	950	-26.55	950	-23.61	949		
-19.78	947	-12	946.2	12	946.2	25.17	947	31.88	949		
55.18	950	121.78	951	127.04	952	136.95	952	197.97	951		
326.39	951	343.12	952	367.78	952	371.51	951	455.62	951		
468.83	952	501.12	953	537.98	954	600.17	955	637.67	956		
653.63	957	666.01	958								

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-1178.48	.1	-26.55	.04	55.18	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.55	55.18		75.45	75.45		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.65

INPUT

Description: left overbank re-coded using comparison 7 proposed contours

Station Elevation Data									
num= 42									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-424.46	955	-417.2	954	-407.52	953	-399.64	952	-383.88	951
-376.27	950	-343.58	949	-323.46	949	-279.51	950	-241.55	950
-182.66	949	-150.35	948	-122.79	948	-105.25	949	-87.83	949
-63.95	949.3	-39.4	949	-21.79	948	-17.59	947	-11.2	946.2
0	946.2	14.15	946.2	20.5	947	29.69	948	37.86	949
40.82	950	114.17	951	121.08	952	147.32	952	158.96	951
219.81	950.8	267.25	951	290.07	952	358.32	953	368.42	953
373.84	952	377.45	951	453.08	951	460.6	952	464.21	953
465.49	954	467.3	955						

Manning's n Values					
num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-424.46	.06	-21.79	.04	40.82	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.79	40.82		51.92	51.92		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.64

INPUT

Description: left overbank re-coded using comparison 7 proposed contours

Station Elevation Data									
num= 37									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-373.18	955	-365.83	954	-359.03	953	-349.51	952	-338.25	951
-330.3	950	-232.15	949	-213.61	948	-96.09	948	-79.23	949
-61.39	949.2	-46	949	-26.06	948	-19.2	947	-4.99	946.15
0	946.15	14.76	946.15	19.62	947	22.31	948	24.94	949
32.12	950	109.01	951	116.29	952	130.06	953	140.05	953
148.33	952	169.09	951	296.81	951	349.88	952	359.01	953
376.01	953	379.29	952	381.58	951	452.64	951	457.66	952
460.94	953	462.74	954						

Manning's n Values					
num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-373.18	.06	-26.06	.04	24.94	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.06	24.94		95	124.89		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.62

INPUT

Description: left overbank re-coded using comparison 7 proposed contours

Station	Elevation	Data	num=	39						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-281.86	955	-261.9	950	-233.81	949	-220.69	948	-56.03	948	
-46.25	949	-39.97	950	-28.46	950	-21.12	949	-18.26	948	
-16.34	947	-6.3	946.1	0	946.1	7.74	946.1	13.49	947	
32.67	948	51.93	949	55.96	949.1	61.05	949	65.7	948.9	
70.78	949	79.19	950	85.68	951	91.62	951.1	97.86	951	
148.02	951	153.27	952	165.36	952	182.98	952	394.89	952	
399.15	953	415.96	953	419.3	952	422.62	951	503.5	951	
511.19	952	513.39	953	514.73	954	516.06	955			

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-281.86	.06	-28.46	.04	55.96	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-28.46	55.96		79.82	79.82		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 880.61

INPUT

Description: left overbank re-coded using comparison 7 proposed contours

Station	Elevation	Data	num=	33						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-262.78	955	-246.93	951	-241.64	950	-200.88	949	-190.37	948	
-60.04	948	-45.05	949	-32.51	949	-22.79	948	-18.95	947	
-15.6	946	-12.37	945	0	945	10.32	945	13.87	946	
18.74	947	65.95	948	70.76	949	74.74	950	81.33	951	
96.86	950	132.38	950	137.42	951	142.13	952	152.41	952	
386.69	952	397.62	952.4	409.24	952	412.25	951	503.25	951	
508.62	952	523.09	953	527.03	954					

Manning's n Values		num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-262.78	.06	-32.51	.04	74.74	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-32.51	74.74		104.09	104.09		.1	.3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.40

INPUT

Description: left overbank re-coded using comparison 7 proposed contours

Station Elevation Data		num= 25							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-230.73	954	-214.4	950	-139.35	949	-96.51	948	-42.93	948
-29.76	948	-14.67	947	-12.54	946	-10.49	945	14.28	945
23.53	946	32.98	947	38.05	948	43.15	949	47.9	950
61.2	950.1	76.87	950	103.4	950	130.26	951	135.43	952
140.22	952.2	770.79	952.2	784.52	953	804.96	954	810.22	955

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-230.73	.05	-29.76	.04	43.15	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-29.76	43.15		293	288.26		.1	.3

Ineffective Flow		num= 1	
Sta L	Sta R	Elev	Permanent
300	810.22	952.4	T

BRIDGE

RIVER: Rocky Fork

REACH: 1

RS: 880.30

INPUT

Description: Old Dublin Granville Bridge over Rocky Fork

FRA-CR

546-12.90

Coded using 2020 record plans

Distance from Upstream XS = 1.5

Deck/Roadway Width = 46.167

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 28									
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
-100	955.4		-65.37	955.4		-45.37	955.12		
-44	955.1		-44	955.1	953.28	-25.37	954.85	953.03	
0	954.71	952.89	14.63	954.61	952.79	34.63	954.38	952.56	
44	954.35	952.53	44	954.35		60.63	954.18		
84.63	954		114.63	953.83		134.63	953.66		
215.8	953		221.37	952.8		251.41	952.6		

321.01	952.4	388.74	952.4	438.5	952.6
490.08	952.8	499.88	953	616.5	954
685.76	955	737.54	956	778.8	957
813.9	958				

Upstream Bridge Cross Section Data

Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-230.73	954	-214.4	950	-139.35	949	-96.51	948	-42.93	948
-29.76	948	-14.67	947	-12.54	946	-10.49	945	14.28	945
23.53	946	32.98	947	38.05	948	43.15	949	47.9	950
61.2	950.1	76.87	950	103.4	950	130.26	951	135.43	952
140.22	952.2	770.79	952.2	784.52	953	804.96	954	810.22	955

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-230.73	.05	-29.76	.04	43.15	.1

Bank Sta: Left Right Coeff Contr. Expan.

-29.76	43.15	.1	.3
--------	-------	----	----

Ineffective Flow num= 1

Sta L	Sta R	Elev	Permanent
300	810.22	952.4	T

Downstream Deck/Roadway Coordinates

num= 28

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-100	955.4		-65.37	955.4		-45.37	955.12	
-44	955.1		-44	955.1	953.28	-25.37	954.85	953.03
0	954.71	952.89	14.63	954.61	952.79	34.63	954.38	952.56
44	954.35	952.53	44	954.35		60.63	954.18	
84.63	954		114.63	953.83		134.63	953.66	
215.8	953		221.37	952.8		251.41	952.6	
321.01	952.4		388.74	952.4		438.5	952.6	
490.08	952.8		499.88	953		616.5	954	
685.76	955		737.54	956		778.8	957	
813.9	958							

Downstream Bridge Cross Section Data

Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-70.23	955	-44	951.24	-17.5	945	0	944.5	17.5	945
44	950.36	110.99	951.5	606.49	951.5	648.32	952	731.45	953
772.43	954	812.49	955						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-70.23	.04	-17.5	.04	17.5	.04

Bank Sta: Left Right Coeff Contr. Expan.



-17.5 17.5 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -70.23 -45.5 952.4 T  
 45.5 812.49 952.4 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data

Pier Station Upstream= -17.5 Downstream= -17.5  
 Upstream num= 4  
 Width Elev Width Elev Width Elev Width Elev  
 1.333 940 1.33 950.94 3 950.94 3 952  
 Downstream num= 4  
 Width Elev Width Elev Width Elev Width Elev  
 1.333 940 1.33 950.94 3 950.94 3 952

Pier Data

Pier Station Upstream= 17.5 Downstream= 17.5  
 Upstream num= 4  
 Width Elev Width Elev Width Elev Width Elev  
 1.333 940 1.333 950.6 3 950.6 3 953  
 Downstream num= 4  
 Width Elev Width Elev Width Elev Width Elev  
 1.333 940 1.333 950.6 3 950.6 3 953

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Energy Only

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.20

INPUT

Description:

Station Elevation Data	num=	12								
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev										
-70.23 955 -44 951.24 -17.5 945 0 944.5 17.5 945										
44 950.36 110.99 951.5 606.49 951.5 648.32 952 731.45 953										
772.43 954 812.49 955										

Manning's n Values	num=	3			
Sta n Val Sta n Val Sta n Val					
-70.23 .04 -17.5 .04 17.5 .04					

Bank Sta: Left Right	Lengths: Left Channel Right	Coeff Contr.	Expan.
-17.5 17.5	50 50 50	.3	.5

Ineffective Flow	num=	2		
Sta L Sta R Elev Permanent				
-70.23 -45.5 952.4 T				
45.5 812.49 952.4 T				

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.15

INPUT

Description:

Station Elevation Data	num=	11							
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev									
-70.23 955 -44 951.24 -17.5 945 0 944.5 17.5 945									
44 950.36 47.59 952 541.53 952 654.31 953 719.08 954									
761.18 955									

Manning's n Values	num=	3			
Sta n Val Sta n Val Sta n Val					
-70.23 .04 -17.5 .04 17.5 .04					

Bank Sta: Left Right	Lengths: Left Channel Right	Coeff Contr.	Expan.
-17.5 17.5	155 137.53 125	.3	.5

Ineffective Flow	num=	2		
Sta L Sta R Elev Permanent				
-70.23 -45.5 952.4 T				
45.5 761.18 952.4 T				

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 880.1

INPUT

Description:

Station Elevation Data			num= 23						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-271.06	954	-260.32	953	-255.5	952	-228.48	952	-204.26	952.2
-179.06	952	-139.5	951	-118.32	950	-84.46	949	-25.59	949
-23.5	948	-17.31	945	-10	944.5	7	944.5	10.77	945
15.97	947	24.03	948	50.96	949	102.28	950	116.07	952
288.53	953	428.67	954	439.95	955				

Manning's n Values			num= 4				
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-271.06	.1	-25.59	.04	24.03	.01	50.96	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-25.59	24.03		445	533.81		.1	.3

Ineffective Flow			num= 1
Sta L	Sta R	Elev	Permanent
92.88	439.95	952	T

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 879

INPUT

Description:

Station Elevation Data			num= 28						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-473.07	953	-465.36	952	-420.52	951	-211.94	950	-108.45	949
-66.9	948.5	-29.07	949	-24.02	949.2	-19.06	949	-14.12	945
-12	943.4	-10	942.9	10	942.9	12	943.4	15.09	945
18.3	946	48.47	947	55.13	948	68.51	949	113.5	948
137.33	948	197.05	948.8	296	948.8	300.55	949	309.03	950
314.65	951	319.34	952	323.6	953				

Manning's n Values			num= 3		
Sta	n Val	Sta	n Val	Sta	n Val
-473.07	.1	-19.06	.035	68.51	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-19.06	68.51		872.31	866.57		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 878

INPUT

Description:

Station Elevation Data			num= 53								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1574.84	952	-1507.75	951	-1503.32	950	-1491.46	949	-1484.46	948.8		
-1473.57	949	-1462.91	949.2	-1452.47	949	-1437.35	948	-1433.8	945		
-1430.79	944	-1405.79	944	-1401.82	945	-1400.29	950	-1368.32	951		
-1347.44	952	-1330.13	953	-1307.93	954	-1300.12	953	-1296.42	952		
-1293.07	951	-1289.6	950	-1285.68	949	-1247.1	949	-1233.73	950		
-1227.12	951	-1220.86	952	-1174.61	952	-1166.8	951	-1155.19	950		
-1112.9	949.2	-876.43	949	-642.39	949	-197.51	948	-149.08	947.5		
-102.36	948	-47.38	948	-34.13	948.2	-20.04	948	-15.66	944		
-14	943.4	-12	942.4	12	942.4	14	943.4	15.27	944		
21.99	946	53.8	947	106.41	948	112.43	949	116.89	950		
122.21	951	131.04	952	147.7	953						

Manning's n Values			num= 5								
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-1574.84	.1	-1452.47	.04	-1400.29	.1	-20.04	.035	106.41	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-20.04	106.41		475	645.93		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1

RS: 877.5

INPUT

Description:

Station Elevation Data			num= 52								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-1246.42	952	-1174.4	951	-1127.21	950	-1064.03	949	-1019.11	948.5		
-975.15	949	-955.99	949	-943.78	948	-847.34	947	-842.2	946		
-834.38	945	-828.82	944	-825	943.7	-815	943.7	-810.8	944		
-809.37	945	-807.9	946	-806.37	947	-757.55	947	-719.28	948		
-610.85	948	-562.93	948.2	-517.35	948	-465.31	947.5	-408.26	948		
-314.37	948.5	-204.24	948	-189.64	947	-178.54	946.8	-166.5	947		
-150.58	947.5	-130.7	947	-117.88	946	-87.52	946.8	-76.35	946		
-72.23	946	-50.46	947	-34.67	947.5	-18.1	947	-13.46	944		
-8	941.8	0	941.8	12	941.8	20.93	944	22.97	945		
25.54	946	95.99	947	256.78	948	274.59	949	340.43	950		

384.74 951 403.18 952

Manning's n Values			num=	5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-1246.42	.1	-847.34	.04	-806.37	.1	-18.1	.035	25.54	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.1	25.54		375 598.7	425		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 877.2

INPUT

Description:

Station Elevation Data			num=	39					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-974.17	952	-897.89	951	-842.94	950	-786.21	949	-762.45	948
-672.82	947	-668.64	946	-665.84	944	-660.03	943	-648.84	943
-634.19	943	-631.25	944	-627.1	947	-574.19	948	-547.43	949
-473.32	950	-459.9	950.5	-450.21	950	-444.51	949	-438.77	948
-339.35	948	-330.83	948	-124.42	947	-35.95	946	-21.2	946
-16.66	945	-11.76	941.3	0	943	15.98	943	20.05	944
24.81	945	28.94	946	73.23	947	86.02	948	106.46	949
161.86	950	253.81	950.2	349.26	951	465.67	952		

Manning's n Values			num=	5					
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-974.17	.1	-672.82	.035	-627.1	.1	-21.2	.035	28.94	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.2	28.94		570 567	589		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
REACH: 1 RS: 877

INPUT

Description:

Station Elevation Data			num=	37					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-297.25	952	-285.75	950	-280.08	949	-274.03	948	-199.04	947
-174.36	946	-156.29	946	-149.37	947	-102.75	947	-25.55	946
-22.82	945	-18.11	944	-15.44	943	-13.24	942	-11.5	940.9
11.5	940.9	15.46	942	17.78	943	20.71	944	25.23	945
37.6	946	53.77	947	73.52	948	103.03	949	112.2	950

121.71	950.4	126.26	950	156.83	949	164.95	948	176.32	946
217.81	945.5	265.25	946	270.46	947	287.88	948	298.24	949
322.21	950	372.02	951						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-297.25	.1	-25.55	.035	37.6	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-25.55	37.6		519 546.36	501		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.5

INPUT

Description:

Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-211.88	950	-208.56	949	-205.64	948	-201.54	947	-133.49	946
-125.28	946	-98.17	947	-89.77	947	-75.42	946	-55.82	945
-46.62	944	-37.96	943	-30.75	942	-26.55	941	-22.3	940
0	940	34.4	940	38.71	941	38.8	944.375	38.87	947
46.96	948	58.31	948.2	70.57	948	75.9	947	86.9	946
91.16	945	94.66	944	98.37	943	107.69	942.6	117.21	943
126.32	944	135.81	945	153.86	946	168.96	947	192.82	948
228.83	949	260.69	950						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-211.88	.1	-46.62	.04	38.8	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-46.62	38.8		431.44 431.44	431.44		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.2

INPUT

Description: upstream side of golf course bridge

Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-447.63	950	-427.81	949	-404.21	948	-363.98	947	-354.43	947
-326.97	948	-293.92	948	-279.59	947	-268.78	946	-247.6	945
-220	944.6	-190	944.6	-161.51	945	-157.36	946	-153.99	947

-150.74	948	-144.34	950	-131.72	951	-118.43	952	-93.24	952
-78.38	951	-41.27	950	-29.42	949	-24.84	948	-23.93	943.8
-23.32	941	14.13	941	19.74	944	58.7	944.2	130.43	944
142	943.8	153.11	944	221.86	945	234.36	946	260.9	947
331.6	948	417.21	949	466.8	950				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-447.63	.05	-23.93	.04	19.74	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.93	19.74		66.7	66.7		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876.1

INPUT  
 Description: downstream side of golf course bridge

Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-371.78	950	-324.22	949	-297.63	948	-277.31	947	-229.71	947
-210.41	947.4	-189.53	947	-182.71	946	-173.43	945	-156.91	944
-71.3	943.2	-29.68	944	-23.14	943	-21.97	941	22.28	941
27.58	943	30.47	944	64.57	944	81.76	943.9	98.62	944
129.33	944.2	165.63	944	186.54	943.8	207.96	944	267.39	945
295.31	946	316.92	947	411.8	948	484.09	949	504.63	950

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-371.78	.05	-29.68	.04	30.47	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-29.68	30.47		600	532.58		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 876

INPUT  
 Description: recoded using 2011 auditors topo

Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-203.03	950	-192.54	949	-186.47	947	-155.83	947	-142.21	946
-129.64	946	-53.79	947	-41.2	947.2	-29.46	947	-26.67	946
-23.86	945	-22.4	944	-21.27	943	-19.85	942	-18.34	941

-16.86	940	20.79	940	26.87	941	52.49	942	59.46	943
70.61	944	88.07	944.2	122.07	944	134.59	943	139.95	943
144.1	944	168.26	944	177.21	943	207.03	943	240.84	944
253.8	944	306.15	944	338.8	943.7	385.71	944	436.55	945
500.09	946	572.15	947	625.22	948	650.71	949		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-203.03	.05	-22.4	.04	70.61	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-22.4	70.61		715 816.04	640		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 875.9

INPUT

Description:

Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-213.79	949	-208.69	948	-205.46	947	-201.94	946	-197.5	945
-189.89	944	-160.97	943	-144.9	942	-122.47	942	-101.76	943
-66.91	943.2	-30.44	943	-26.12	942	-23.69	940	-22.49	939
12.85	939	15.6	940	18.01	941	79.68	942	110.47	942.2
136.46	942	158.2	941	180.33	941	191.53	942	197.9	943
202.5	944	210.51	944.6	217.84	944	220.03	943	223.52	942
226.88	941	240.19	940.8	253.95	941	256.81	942	259.64	943
263.13	944	267.04	945	271.19	946	275.49	947	290.29	948

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-213.79	.1	-26.12	.04	18.01	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.12	18.01		317 491.31	442		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 875.8

INPUT

Description:

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-73.41	949	-68.19	948	-64.25	947	-60.33	946	-56.42	945



-45.72	944	-38.12	943	-31.03	942	-19.35	939	-15	938.5
15	938.5	26.12	939	29.49	940	32.81	941	36.1	942
99.06	942.1	132.84	943	146.95	944	154.92	945	168.37	946

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-73.41	.1	-31.03	.04	36.1	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-31.03	36.1		825 844.68	830		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 874

INPUT

Description:

Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-164.21	947	-157.3	946	-152.86	945	-97.25	944	-84.7	943
-76.1	942	-61.76	941	-34.77	940	-30.56	939	-26.29	938
-20.94	937.9	16.53	937.9	19.16	938	21.36	939	23.59	940
48.97	941	100.15	941	173.42	940.4	310.14	941	351.5	942
406.42	943	426.11	944	437.47	945	470.33	946		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-164.21	.05	-34.77	.035	23.59	.055

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-34.77	23.59		173.87 173.87	173.87		.1	.3

CROSS SECTION

RIVER: Rocky Fork  
 REACH: 1 RS: 873.9

INPUT

Description:

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-146.59	945	-143.01	944	-139.3	943	-107.32	942	-93.48	941
-83.9	940	-27.06	939	-21.7	938	-16.09	937	-12	936.9
15	936.9	16	937	17	938	18	939	19	940

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-----	-------	-----	-------	-----	-------

-146.59 .05 -27.06 .035 18 .055

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-27.06 18 .1 .04 .1 .1 .3

CROSS SECTION

RIVER: Rocky Fork

REACH: 1

RS: 873

INPUT

Description: FEMA Section U

Converted from 1929 datum to 1988 datum by  
lowering elevations by 0.60-feet

Station Elevation Data num= 55

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	972.4	250	972.4	500	972.4	750	972.4	850	972.4
933	972.4	1158	970.4	1444	963.4	1726	960.4	2009	955.4
2100	955.4	2280	955.4	2303	955.4	2303	969.4	2344	969.4
2345	955.4	2454	953.4	2574	953.4	2650	952.4	2830	952.4
2900	952.4	2915	952.4	3021	951.4	3038	951.4	3250	949.79
3301	949.4	3460	945.4	3575	945.4	3700	945.4	3727	935.4
3735	930.4	3769	930.4	3773	932.4	3801	933.4	3906	934.4
3986	933.4	4075	935.4	4110	936.59	4252	941.4	4370	944.59
4508	948.4	4580	948.4	4873	948.4	5124	950.4	5406	953.4
5746	957.4	5989	957.4	6098	958.4	6253	961.4	6380	958.4
6520	958.4	6633	959.4	6989	960.4	7323	961.4	7644	963.4

Manning's n Values num= 9

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.055	850	.05	3250	.055	3575	.05	3727	.035
4075	.055	4110	.05	4370	.055	4580	.05		

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
3727 4075 0 0 0 .1 .3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 3.553

INPUT

Description:

Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-76.15	1021	-71.78	1020	-67.28	1019	-62.83	1018	-22.16	1017
-8.21	1016	-7	1015.1	7	1015.1	8.29	1016	11.02	1017
20.7	1018	46.17	1019	57.78	1020	70.43	1021		

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -76.15 .05 -8.21 .04 8.29 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -8.21 8.29 47.82 47.82 47.82 .1 .3

LATERAL STRUCTURE

RIVER: Sugar Run  
 REACH: 1 RS: 3.550

INPUT

Description:  
 Lateral structure position = Right overbank  
 Distance from Upstream XS =  
 Deck/Roadway Width = 20  
 Weir Coefficient = 2  
 Weir Flow Reference = Water Surface  
 Weir Embankment Coordinates num = 2  
 Sta Elev Sta Elev  
 0 1017.5 40 1017.5

Weir crest shape = Broad Crested

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.544

INPUT

Description:  
 Station Elevation Data num= 13  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -11.31 1020 -9.07 1018 -7.92 1017 -6.75 1016 -5.69 1015  
 -4.5 1014.6 4.5 1014.6 5.45 1015 8.6 1016 11.7 1017  
 23.22 1018 27.85 1019 32.49 1020

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -11.31 .05 -6.75 .04 8.6 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -6.75 8.6 25.52 25.52 25.52 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.539

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-27.66	1020	-23.77	1019	-13.85	1018	-10.3	1017	-8.11	1016	
-6.07	1015	-5	1014.4	4	1014.4	5.43	1015	7.14	1016	
8.81	1017	10.46	1018	12.1	1019	13.75	1020			

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-27.66	.05	-8.11	.04	7.14	.05	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-8.11	7.14		66 56.82	45		.3	.5

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.528

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-10.8	1020	-9.19	1018	-7.58	1016	-6.8	1015	-6.05	1014	
6.89	1014	9.32	1015	11.97	1016	25.51	1017	35.05	1018	
38.69	1019	44.11	1020							

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-10.8	.05	-7.58	.04	11.97	.05	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.58	11.97		94 91.37	90		.1	.3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 3.511

INPUT

Description:

Station Elevation Data				num=						
				11						

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-15.85	1020	-8.48	1015	-6.95	1014	-6	1013.5	5	1013.5
7.06	1014	9.73	1015	13.07	1016	34.71	1017	44.18	1018
49.29	1019								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-15.85	.1	-8.48	.04	9.73	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-8.48	9.73		96.26	96.26		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.493

INPUT

Description:

Station Elevation Data		num=		14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.04	1019	-35.28	1018	-27.52	1017	-16.3	1016	-12.25	1015
-9.58	1014	-8	1013.1	7	1013.1	8.84	1014	11.28	1015
16.08	1016	23.61	1017	30.15	1018	42.17	1019		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-41.04	.1	-16.3	.04	16.08	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-16.3	16.08		49	47.99		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.484

INPUT

Description: upstream side of western driveway culvert

Station Elevation Data		num=		14					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.76	1018	-33.79	1017	-11.38	1016	-9.17	1015	-7.72	1014
-6.49	1013	-5.5	1012.8	2.5	1012.8	3.37	1013	5.2	1014
7.16	1015	9.18	1016	11.26	1017	13.47	1018		

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-49.76	.1	-11.38	.04	9.18	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-11.38	9.18	45	39.47	34		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.476

INPUT

Description: downstream side of western driveway culvert

Station	Elevation	Data	num=	20					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-16.67	1018	-14.17	1017	-11.04	1016	-9	1015	-7.28	1014
-5.62	1013	4.03	1013	6.79	1014	9.46	1015	12	1016
14.3	1017	19.02	1018	25.73	1018.2	33.52	1018	38.22	1017
40.44	1016	53.56	1015.2	90.4	1016	113.5	1017	181.51	1018

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-16.67	.1	-9	.04	9.46	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-9	9.46	175	185.84	196		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.441

INPUT

Description:

Station	Elevation	Data	num=	12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-19.93	1016	-16.34	1015	-12.65	1014	-9.86	1013	-7.49	1012
-6	1011.5	9	1011.5	10.47	1012	14.77	1013	19.14	1014
91.58	1015	126.92	1016						

Manning's n	Values	num=	3		
Sta	n Val	Sta	n Val	Sta	n Val
-19.93	.1	-12.65	.04	19.14	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-12.65	19.14	245	253.25	248		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.393

INPUT

Description:

Station Elevation Data num= 20											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-148.96	1016	-126.58	1015	-118.61	1014	-111.27	1013	-100.85	1012		
-83.16	1011.6	-65.28	1012	-57.33	1012.1	-48.79	1012	-9.22	1011		
-4.53	1010	-4	1009.5	6	1009.5	6.62	1010	9.63	1011		
12.38	1012	16.29	1013	37.89	1014	50.58	1015	77.91	1016		

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-148.96	.1	-9.22	.04	9.63	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-9.22	9.63		160 191.77	210		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.357

INPUT

Description:

Station Elevation Data num= 18											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-52.21	1015	-42.4	1014	-36.39	1013	-30.12	1012	-25.41	1011		
-21.9	1010	-6.47	1009	-3.82	1008	-3	1007.7	6	1007.7		
8.84	1008	11.15	1009	13.86	1010	46.14	1011	53.71	1012		
60.99	1013	67.69	1014	75.29	1015						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-52.21	.1	-6.47	.04	13.86	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-6.47	13.86		228 223.28	170		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.314

INPUT

Description:

Station Elevation Data num= 14	
--------------------------------	--

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.83	1011	-33.01	1010	-25.11	1009	-17.26	1008	-10.46	1007
-4.84	1006	-1.79	1005	4.88	1005	8.62	1006	12.9	1007
21.89	1008	31.89	1009	44.53	1010	57.49	1011		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.83	.1	-10.46	.04	12.9	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.46	12.9		131.16	131.16		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.290

INPUT

Description:

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-56.21	1010	-50.5	1009	-45.29	1008	-39.72	1007	-35.71	1006
-7.91	1005	-4.97	1004	10.17	1004	18.31	1005	28.39	1005
35.51	1006	52.61	1007	67.95	1008	75.19	1009	78.18	1010

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-56.21	.1	-7.91	.04	18.31	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.91	18.31		200	250.66		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.242

INPUT

Description: upstream side of the New Albany Road east culvert

Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-165.56	1010	-159.97	1009	-154.58	1008	-145.81	1007	-129.75	1006
-90.61	1005	-74.07	1004	-35.8	1003	-26.34	1002	-6.26	1001.2
5.58	1001.2	8.33	1002	9.11	1008				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-165.56	.06	-26.34	.04	8.33	.04



Bank Sta: Left	Right	Lengths: Left Channel			Right	Coeff Contr.	Expan.
-26.34	8.33	241.51	241.51	241.51	.3	.5	
Ineffective Flow		num=	1				
Sta L	Sta R	Elev	Permanent				
-165.56	-66.62	1012	T				

CULVERT

RIVER: Sugar Run  
 REACH: 1 RS: 3.22

INPUT

Description: bridge plans are on 1929 datum, elevations converted to 1988 datum  
 by lowering 0.60 feet

Distance from Upstream XS = 65  
 Deck/Roadway Width = 108  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	2	
Sta Hi Cord	Lo Cord	Sta Hi Cord Lo Cord
-200	1012	100 1012

Upstream Bridge Cross Section Data

Station Elevation Data	num=	13								
Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev
-165.56 1010	-159.97 1009	-154.58 1008	-145.81 1007	-129.75 1006						
-90.61 1005	-74.07 1004	-35.8 1003	-26.34 1002	-6.26 1001.2						
5.58 1001.2	8.33 1002	9.11 1008								

Manning's n Values

num=	3	
Sta n Val	Sta n Val	Sta n Val
-165.56 .06	-26.34 .04	8.33 .04

Bank Sta: Left	Right	Coeff Contr.	Expan.
-26.34	8.33	.3	.5

Ineffective Flow		num=	1	
Sta L	Sta R	Elev	Permanent	
-165.56	-66.62	1012	T	

Downstream Deck/Roadway Coordinates

num=	2	
Sta Hi Cord	Lo Cord	Sta Hi Cord Lo Cord
-200	1012	100 1012

Downstream Bridge Cross Section Data

Station Elevation Data	num=	16								
Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev	Sta Elev
-23.02 1005	-19.45 1004	-15.54 1003	-12.33 1002	-10.22 1001						

-8.48	1000	-6.8	999	-5.5	998.3	4.5	998.3	5.74	999
8.27	1000	11.32	1001	14.68	1002	18.31	1003	22.09	1004
27.21	1005								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-23.02	.05	-8.48	.04	8.27	.1

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	-8.48	8.27		.3	.5

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
Culvert #1	Conspan Arch	9	32

FHWA Chart # 60- Span/Rise ratio approximate 2:1  
 FHWA Scale # 1 - 0 degree wing wall angle  
 Solution Criteria = Highest U.S. EG

Culvert	Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef
1	29.3	170	.013	.02	1		.4

Upstream Elevation = 999.5  
 Centerline Station = 0  
 Downstream Elevation = 997.96  
 Centerline Station = 0

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.196

INPUT

Description: downstream side of the New Albany Road east culvert

Station	Elevation	Data	num=	16					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-23.02	1005	-19.45	1004	-15.54	1003	-12.33	1002	-10.22	1001
-8.48	1000	-6.8	999	-5.5	998.3	4.5	998.3	5.74	999
8.27	1000	11.32	1001	14.68	1002	18.31	1003	22.09	1004
27.21	1005								

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -23.02 .05 -8.48 .04 8.27 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -8.48 8.27 86 91.84 88 .3 .5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.179

INPUT

Description:

Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -34.39 1003 -31.14 1002 -28.01 1001 -25.05 1000 -20.86 999  
 -8.52 998 -6 997.8 4 997.8 5.46 998 7.86 999  
 10.24 1000 43.02 1001 56.7 1002 70.47 1003

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -34.39 .1 -8.52 .04 10.24 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -8.52 10.24 200 165.71 127 .1 .3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.148

INPUT

Description:

Station Elevation Data num= 14  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 -84.34 1001 -56 1000 -12.77 999 -9.72 998 -7.37 997  
 -5.08 996 -4 995.9 4 995.9 5.86 996 8.83 997  
 12.12 998 20.79 999 78.69 1000 104.12 1001

Manning's n Values num= 3  
 Sta n Val Sta n Val Sta n Val  
 -84.34 .1 -12.77 .04 20.79 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 -12.77 20.79 374 384.63 325 .1 .3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.075

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-69.29	997	-64.02	996	-51.54	995	-15.94	994	-8.83	993	
-6	992.5	5	992.5	7.25	993	10.31	994	15.31	995	
88.7	996	90.9	997							

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-69.29	.1	-15.94	.04	10.31	.1	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-15.94	10.31		115	140.6		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 3.048

INPUT

Description:

Station Elevation Data				num=						
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	
-52.4	996	-48.13	995	-37.86	994	-16.23	993	-10.49	992	
6.73	992	11.38	993	55.57	993.1	120.55	994	129.1	995	
138.29	996									

Manning's n Values				num=		
Sta	n Val	Sta	n Val	Sta	n Val	
-52.4	.1	-16.23	.04	11.38	.1	

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-16.23	11.38		487	598.33		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.933

INPUT

Description:

Station Elevation Data				num=						
				19						

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.78	995	-25.82	994	-20.54	993	-15.81	992	-14.03	991
-12.47	990	-10.92	989	-9.39	988	-7.89	987	-6	986.6
6	986.6	6.94	987	9.46	988	11.91	989	14.43	990
106.74	991	116.24	992	120.59	993	126.79	994		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.78	.1	-12.47	.04	14.43	.05

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-12.47	14.43		366 421.46	430		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.855

INPUT

Description:

Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-170.27	990	-135.64	989	-102.34	988	-60.43	987.1	-28.17	987
-13.86	986	-8.1	985	-3.96	984	19.08	984	20.75	985
22.46	986	24.2	987	25.93	988	27.65	989	29.68	990

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-170.27	.1	-13.86	.04	22.46	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.86	22.46		360 361.29	320		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.786

INPUT

Description:

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-77.69	987	-73.85	985	-72.43	984	-71.34	983	-28.5	983
-25.37	984	-22.21	985	-16.13	985	-11.1	984	-7.44	983
-6	982.2	6	982.2	9.38	983	50.6	984	95.03	985
101.63	986	106.58	987						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-77.69	.06	-7.44	.04	9.38	.1

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-7.44	9.38	258	291.74	240	.1	.3	
Ineffective Flow		num=	1				
Sta L	Sta R	Elev	Permanent				
-77.69	-22.21	985	T				

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.731

INPUT

Description: upstream side of New Albany Road West Conspan

Station Elevation Data	num=	17							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.99	985	-41.87	984	-39.82	983	-37.94	982	-30.89	981
-13.41	980	-4.71	979	-4	978.5	4	978.5	7.48	979
9.55	980	11.64	981	14.04	982	45.2	982	57.74	983
69.04	984	79.57	985						

Manning's n Values	num=	3			
Sta	n Val	Sta	n Val	Sta	n Val
-43.99	.08	-13.41	.04	14.04	.08

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-13.41	14.04	226.56	226.56	226.56	.3	.5	

CULVERT

RIVER: Sugar Run  
 REACH: 1 RS: 2.70

INPUT

Description:

Distance from Upstream XS = 58  
 Deck/Roadway Width = 106  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates	num=	2				
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
-200	987		200	987		

Upstream Bridge Cross Section Data

Station Elevation Data	num=	17							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

-43.99	985	-41.87	984	-39.82	983	-37.94	982	-30.89	981
-13.41	980	-4.71	979	-4	978.5	4	978.5	7.48	979
9.55	980	11.64	981	14.04	982	45.2	982	57.74	983
69.04	984	79.57	985						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.99	.08	-13.41	.04	14.04	.08

Bank Sta: Left Right Coeff Contr. Expan.

-13.41	14.04		.3	.5
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Downstream Deck/Roadway Coordinates num= 2

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
-200	987		200	987	

Downstream Bridge Cross Section Data Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-66.01	984	-57.13	983	-46.56	982	-36.65	981	-27.57	980
-13.74	979	-8.86	978	-6.83	977	-5	976.9	4.5	976.9
5.98	977	9.29	978	13.69	979	17.02	980	20.16	981
21.52	982	22.59	983	26.82	984				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-66.01	.08	-13.74	.04	13.69	.08

Bank Sta: Left Right Coeff Contr. Expan.

-13.74	13.69		.3	.5
--------	-------	--	----	----

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span				
Culvert #1	Conspan Arch	8.1	32				
FHWA Chart # 60- Span/Rise ratio approximate 2:1							
FHWA Scale # 2 - 45 degree wing wall angle							
Solution Criteria = Highest U.S. EG							
Culvert Upstrm Dist	Length	Top n	Bottom n	Depth Blocked	Entrance Loss Coef	Exit Loss Coef	
	35.5	150	.013	.024	0	.4	

1  
 Upstream Elevation = 978  
 Centerline Station = 0  
 Downstream Elevation = 977.05  
 Centerline Station = 0

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.688

INPUT

Description: downstream side of New Albany Road West Conspan

Station Elevation Data		num= 18							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-66.01	984	-57.13	983	-46.56	982	-36.65	981	-27.57	980
-13.74	979	-8.86	978	-6.83	977	-5	976.9	4.5	976.9
5.98	977	9.29	978	13.69	979	17.02	980	20.16	981
21.52	982	22.59	983	26.82	984				

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-66.01	.08	-13.74	.04	13.69	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-13.74	13.69		155 204.36	202		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.650

INPUT

Description:

Station Elevation Data		num= 16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-50.44	982	-15.06	981	-12.45	980	-10.2	979	-8.24	978
-6.3	977	-4.36	976	-3.5	975.5	3.5	975.5	4.3	976
7.61	977	11.07	978	14.33	979	23.16	980	82.42	981
112.38	982								

Manning's n Values		num= 3			
Sta	n Val	Sta	n Val	Sta	n Val
-50.44	.1	-10.2	.04	14.33	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.2	14.33		54.54 54.54	54.54		.1	.3



CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.639

INPUT

Description:

Station Elevation Data		num=		16							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-80.35	982	-71.97	981	-55.34	980	-20.73	979	-10.6	978		
-8.44	977	-6.53	976	-4.79	975	4	975	7.35	976		
17.11	977	25.61	978	36.14	979	58.41	980	107.28	981		
132.81	982										

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-80.35	.1	-10.6	.04	25.61	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.6	25.61		110	121.46		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.616

INPUT

Description:

Station Elevation Data		num=		17							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-163.87	981	-155.46	980	-136.62	979	-76.97	978.8	-45.75	978		
-29.51	977	-17.1	976	-12.48	975	-7.62	974	7.45	974		
9.48	975	11.4	976	15.16	977	34.08	978	98.33	979		
140.06	980	170.21	981								

Manning's n Values		num=		3	
Sta	n Val	Sta	n Val	Sta	n Val
-163.87	.1	-17.1	.04	11.4	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-17.1	11.4		221	226.88		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 2.573

INPUT

Description:

Station Elevation Data										num=	29
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-181.13	980	-171.93	979.9	-163.71	980	-116.63	980.2	-77.88	980		
-60.05	979	-55.36	978	-53.19	977	-51.05	976	-48.47	975.7		
-45.69	976	-11.03	976	-8.69	975	-6.15	974	-4.5	973.4		
7	973.4	9.42	974	10.95	975	12.76	976	14.97	977		
27.45	977.3	39.75	977	67.1	976.7	94.53	977	108.67	977		
149.51	977.2	190.98	978	197.94	979	202.35	980				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-181.13	.1	-11.03	.04	12.76	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-11.03	12.76		410 825.21	770		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.417

INPUT

Description:

Station Elevation Data										num=	29
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-435.06	980	-429.42	979	-420.9	978	-395.36	977	-373.21	976		
-332.24	975	-327.35	975	-277.15	975.5	-235.75	975	-232.55	974		
-220.15	974	-156.29	974.8	-92.05	974	-76.66	973.8	-60.52	974		
-48.04	974	-38.62	973	-31.2	973	-10.46	973	-8.15	972		
-6	971.6	6	971.6	8.98	972	11.21	973	17.53	976		
21.6	977	26.58	978	30.43	979	33.62	980				

Manning's n Values						num=	3
Sta	n Val	Sta	n Val	Sta	n Val		
-435.06	.1	-10.46	.04	11.21	.1		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-10.46	11.21		350 409.04	369		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.340

INPUT

Description:

Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-142.62	980	-133.33	979	-121.79	978	-111.04	977	-96.36	976
-66.31	975	-17.87	974	-16	973	-10.91	972	-6.52	971
-5	970.9	6	970.9	7.69	971	12.98	972	18.84	973
25.52	974	34.1	975	45.38	976	54.78	977	62.86	978
70.61	979	79.08	980						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-142.62	.1	-17.87	.04	18.84	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-17.87	18.84	335	318.38	265	.1	.3
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CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.279

INPUT

Description:

Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.52	980	-44.65	979	-38.15	978	-33.96	977	-28.51	976
-21.13	975	-16.14	974	-14.53	973	-13.27	972	-11.99	971
-10.7	970	-8	969.1	8	969.1	9.73	970	11.58	971
13.44	972	30	972.1	61.16	972	74.98	972.2	86.57	972
98.4	971	108.81	971	112.26	972	122.48	972.2	132.15	972
142.03	971.6	152.43	972	160.23	973	181.81	974	194.1	975
204.83	976	211.33	977	216.72	978	222.52	979	226.61	980

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49.52	.1	-13.27	.04	13.44	.1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

-13.27	13.44	215	366.02	175	.1	.3
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CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.210

INPUT

Description:

Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-----	------	-----	------	-----	------	-----	------	-----	------

-58.49	978	-52.48	977	-46.9	976	-41.21	975	-36.58	974
-31.51	973	-16.66	972	-14.5	971	-12.36	970	-10.2	969
-8	968.1	8	968.1	11.17	969	15.12	970	29.54	971
70.29	972	107	973	126.85	974	136.86	975	145.22	976
152.39	977	159.27	978						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-58.49	.1	-12.36	.04	15.12	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-12.36	15.12		260 315.42	285		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.150

INPUT

Description:

Station Elevation Data			num=	26					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-54.73	978	-52.35	977	-49.85	976	-47.47	975	-45.11	974
-42.68	973	-39.89	972	-38.51	971	-33.62	970	-24.31	969.1
-14.19	969.3	-7.47	969	-5.94	968	-4	967.5	7	967.5
9.77	968	19.4	969	71.21	970	76.03	971	79.6	972
85.26	973	93.98	974	100.67	975	104.9	976	109.14	977
117.09	978								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-54.73	.09	-7.47	.04	19.4	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-7.47	19.4		305.03 305.03	305.03		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-54.73	-39.89	984	T
38.84	117.09	984	T

CULVERT

RIVER: Sugar Run  
 REACH: 1 RS: 2.1

INPUT

Description: SR 161 bypass culverts per plan  
 lowered 0.60 feet to convert from

1929 to 1988 datum  
 plans showed a distance of 211 feet, but they  
 measure 238 feet by aerial

Distance from Upstream XS = 56  
 Deck/Roadway Width = 188  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates  
 num= 2  

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-100		984			200		984		

Upstream Bridge Cross Section Data

Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-54.73	978	-52.35	977	-49.85	976	-47.47	975	-45.11	974
-42.68	973	-39.89	972	-38.51	971	-33.62	970	-24.31	969.1
-14.19	969.3	-7.47	969	-5.94	968	-4	967.5	7	967.5
9.77	968	19.4	969	71.21	970	76.03	971	79.6	972
85.26	973	93.98	974	100.67	975	104.9	976	109.14	977
117.09	978								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-54.73	.09	-7.47	.04	19.4	.09

Bank Sta: Left Right Coeff Contr. Expan.  
 -7.47 19.4 .3 .5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-54.73	-39.89	984	T
38.84	117.09	984	T

Downstream Deck/Roadway Coordinates  
 num= 2

Sta	Hi	Cord	Lo	Cord	Sta	Hi	Cord	Lo	Cord
-100		984			200		984		

Downstream Bridge Cross Section Data

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-78.36	975	-73.31	974	-68.95	973	-35.74	972	-24.79	971
-21.75	970	-18.69	969	-14.55	968	-10.42	967	-8	966.7
8	966.7	10.59	967	13.83	968	17.05	969	20.27	970
24.53	971	29.21	972	41.3	973	48.45	974	53.02	975

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-78.36	.09	-24.79	.04	24.53	.09

Bank Sta: Left Right Coeff Contr. Expan.

-24.79 24.53 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 -78.36 -43.57 984 T  
 28.22 53.02 984 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 2

Culvert Name Shape Rise Span  
 Culvert #1 Box 7 14  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef  
 Exit Loss Coef

1  
 29 238 .013 .013 0 .4

Upstream Elevation = 967.43  
 Centerline Station = -8  
 Downstream Elevation = 966.82  
 Centerline Station = -8

Culvert Name Shape Rise Span  
 Culvert #2 Box 7 14  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - Wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef  
 Exit Loss Coef

1  
 10 238 .013 .013 0 .4

Upstream Elevation = 967.4  
 Centerline Station = 8  
 Downstream Elevation = 966.78  
 Centerline Station = 8

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 2.092

INPUT

Description:

Station Elevation Data num= 20									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-78.36	975	-73.31	974	-68.95	973	-35.74	972	-24.79	971
-21.75	970	-18.69	969	-14.55	968	-10.42	967	-8	966.7
8	966.7	10.59	967	13.83	968	17.05	969	20.27	970
24.53	971	29.21	972	41.3	973	48.45	974	53.02	975

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-78.36	.09	-24.79	.04	24.53	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-24.79	24.53		152 166.03	180		.3	.5

Ineffective Flow num= 2				
Sta L	Sta R	Elev	Permanent	
-78.36	-43.57	984	T	
28.22	53.02	984	T	

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 2.061

INPUT

Description: From LOMR Case # 97-05-203P  
Section 906.5

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 12									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
162	975.4	182	973.4	214	969.4	268	969.4	287	967.4
294	966.4	306	966.4	322	969.4	383	969.4	434	971.4
524	973.4	547	975.4						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
162	.09	287	.04	322	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	287	322		415 415	415		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.982

INPUT

Description: From LOMR Case # 97-05-203P  
Section 906.0

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
93	973.4	112	971.4	223	969.4	282	967.4	292	965.4
296	964.4	304	964.4	310	965.4	323	967.4	424	969.4
447	971.4	461	973.4						

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
93	.09	282	.04	323	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	282	323		450	573		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.874

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.6

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		13					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
158	975.4	191	971.4	255	969.4	271	967.4	284	965.4
290	963.4	306	963.4	315	965.4	327	967.4	343	969.4
350	971.4	368	973.4	380	975.4				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
158	.09	284	.04	315	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	315		210	210		.3	.5

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.834



INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.5

Recorded using 2011

Auditors Contours and Record Plans

Elevations lowered 0.60-ft

to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
160.61	980	181.11	979	208.7	978	231.82	977	261.12	976
278.99	975	282.89	974	284	962.8	300	962.8	316	962.8
317.42	965	318.33	973	377.52	974	390.2	975	402.4	976
414.3	977	428.8	978						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
160.61	.06	284	.04	316	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	316		45	45		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
160.61	284	975.38	T
316	428.8	973.65	T

BRIDGE

RIVER: Sugar Run

REACH: 1 RS: 1.83

INPUT

Description: Fodor Road Bridge

Lowered 0.60 feet to convert from 1929 to 1988  
vertical datum

Distance from Upstream XS = 1

Deck/Roadway Width = 43

Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
209.54	977.9		284	975.39	960.6	284.01	975.39	964.09	
285.17	975.35	966.91	289.13	975.2	969.09	294.51	975.01	970.22	
	295	974.99	970.25	300	974.82	970.6	305	974.65	970.25
305.49	974.63	970.22	310.87	974.5	969.09	314.83	974.38	966.91	
	315	974.36	966.73	315.99	974.34	964.09	316	974.34	960.6
	325	974.12		335	973.93		345	973.78	

355	973.68	365	973.62	375	973.64
385	973.69	395	973.78	405	973.93
473.57	975.1	630	977.76		

Upstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
160.61	980	181.11	979	208.7	978	231.82	977	261.12	976
278.99	975	282.89	974	284	962.8	300	962.8	316	962.8
317.42	965	318.33	973	377.52	974	390.2	975	402.4	976
414.3	977	428.8	978						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
160.61	.06	284	.04	316	.06

Bank Sta: Left Right Coeff Contr. Expan.

	284	316	.3	.5
--	-----	-----	----	----

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
160.61	284	975.38	T
316	428.8	973.65	T

Downstream Deck/Roadway Coordinates

num= 26

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
209.54	977.9		284	975.39	960.6	284.01	975.39	964.09
285.17	975.35	966.91	289.13	975.2	969.09	294.51	975.01	970.22
295	974.99	970.25	300	974.82	970.6	305	974.65	970.25
305.49	974.63	970.22	310.87	974.5	969.09	314.83	974.38	966.91
315	974.36	966.73	315.99	974.34	964.09	316	974.34	960.6
325	974.12		335	973.93		345	973.78	
355	973.68		365	973.62		375	973.64	
385	973.69		395	973.78		405	973.93	
473.57	975.1		630	977.76				

Downstream Bridge Cross Section Data

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
224.24	979	235.23	978	242.98	977	260.69	976	276.67	975
282.78	974	284	962.7	300	962.7	316	962.7	316.81	973
408.88	974	445.7	975	475.94	976	520.85	977	574.85	978
580	979								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
224.24	.06	284	.04	316	.06

Bank Sta: Left Right Coeff Contr. Expan.

	284	316	.3	.5
--	-----	-----	----	----

Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 224.24 284 975.39 T  
 316 580 973.62 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy

Selected Low Flow Methods = Energy

High Flow Method

Pressure and Weir flow

Submerged Inlet Cd =  
 Submerged Inlet + Outlet Cd = .8  
 Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.826

INPUT

Description: From LOMR Case # 97-05-203P  
 Section 905.4

Recoded using 2011

Auditors Contours and Record Plans

Elevations lowered 0.60-ft

to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 16  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 224.24 979 235.23 978 242.98 977 260.69 976 276.67 975

282.78	974	284	962.7	300	962.7	316	962.7	316.81	973
408.88	974	445.7	975	475.94	976	520.85	977	574.85	978
580	979								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
224.24	.06	284	.04	316	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	316		161	161		.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
224.24	284	975.39	T
316	580	973.62	T

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.795

INPUT  
 Description: From LOMR Case # 97-05-203P  
 Section 905.3

Elevations lowered  
 0.60-ft to convert from 1929 to 1988 vertical datum

Station	Elevation	Data	num=	12					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
206	974.4	262	969.4	272	968.4	283	967.4	288	964.4
290	961.6	310	961.4	316	962.4	320	964.4	370	965.4
436	969.4	485	971.4						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
206	.09	288	.04	320	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	288	320		147	172		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.763

INPUT  
 Description: From LOMR Case # 97-05-203P  
 Section 905.2

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		9					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
230	969.4	275	966.4	284	964.4	288	960.8	314	961.2
325	964.4	329	965.4	358	967.4	440	969.4		

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
230	.09	284	.04	325	.09

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	284	325		253	258		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.714

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.1

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data		num=		8					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
151	969.4	208	965.4	290	964.4	294	960.8	309	961.1
315	964.4	325	967.4	468	969.4				

Manning's n Values

num= 3

Sta	n Val	Sta	n Val	Sta	n Val
151	.09	290	.04	315	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	290	315		108	145		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.686

INPUT

Description: From LOMR Case # 97-05-203P  
Section 905.0

Stream Reach lengths

changed to tie into new sections downstream

Elevations lowered

0.60-ft to convert from 1929 to 1988 vertical datum

Station Elevation Data num= 14									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
152	969.4	177	968.4	217	967.4	251	965.4	280	964.4
286	963.4	291	960.9	310	960.8	316	965.4	343	967.4
371	967.4	396	966.4	430	967.4	445	969.4		

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
152	.09	286	.04	316	.08

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	286	316		435 532.69	564		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.585

INPUT  
 Description:

Station Elevation Data num= 18									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.34	968	-34.64	967	-24.58	966	-18.68	965	-14.63	964
-12.26	963	-10.38	962	-8.56	961	-7	960.6	11	960.6
12.99	961	15.06	962	17.92	963	22.52	964	59.53	965
85.14	966	127.11	967	135.25	968				

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-49.34	.1	-14.63	.04	22.52	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-14.63	22.52		375 350.57	282		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.519

INPUT  
 Description:

Station Elevation Data num= 24									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.12	968	-38.04	967	-27.34	966	-23.37	965	-20.85	964
-18.28	963	-16.02	962	-13.8	961	-11.32	960	7.45	960
10.59	961	12.92	962	17.57	963	30.72	964	37.45	964.1
44.48	964	61.87	963.7	79.27	964	86.17	964.1	96.32	964

130.13 965 138.27 966 145.75 967 150.2 968

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-49.12 .1 -18.28 .04 17.57 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-18.28 17.57 570 575.72 550 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 1.410

INPUT

Description:

Station Elevation Data num= 17  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
-50.32 966 -46.01 965 -43.47 964 -40.89 963 -36.59 962  
-20.12 961 -17.33 960 -12 959.15 10 959.15 15.13 960  
17.71 961 20.28 962 53.25 962.4 93.22 963 103.45 964  
109.96 965 115.45 966

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-50.32 .1 -20.12 .04 20.28 .1

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
-20.12 20.28 375 373.43 248 .1 .3

CROSS SECTION

RIVER: Sugar Run  
REACH: 1 RS: 1.339

INPUT

Description:

Station Elevation Data num= 17  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
-50.72 965 -46.96 964 -42.01 963 -35.89 962 -19.6 961  
-17.36 960 -15.13 959 -10 958.2 12 958.2 17.3 959  
20.09 960 23.43 961 87 961.1 116.09 962 128.33 963  
134.22 964 141.47 965

Manning's n Values num= 3  
Sta n Val Sta n Val Sta n Val  
-50.72 .1 -19.6 .04 23.43 .1

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
-19.6	23.43	300 494.21	380		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.246

INPUT

Description:

Station Elevation Data	num=	17
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-29.09 964 -26.14 963 -23.41 962 -20.7 961 -17.84 960		
-15.34 959 -11.31 957 -8.5 956.7 6 956.7 8.6 957		
12.37 958 16.09 959 19.72 960 80.51 961 93.8 962		
102.8 963 110.86 964		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-29.09 .1 -17.84 .04 19.72 .1		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
-17.84	19.72	279.18 279.18	279.18		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 1.193

INPUT

Description:

Station Elevation Data	num=	25
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-50.04 963 -44.88 962 -27.03 961 -19.73 960 -15.99 959		
-14.25 958 -12.46 957 -10.64 956 -8 955.5 8 955.5		
13.38 956 15.18 957 16.9 958 25.73 959 28.33 959		
33.24 958.8 38.71 959 44.03 959.1 49.67 959 79.66 958.5		
113.83 959 116.98 960 121.44 961 129.02 962 139.11 963		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-50.04 .05 -15.99 .04 25.73 .1		

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
-15.99	25.73	400 449.11	360		.1	.3

CROSS SECTION



RIVER: Sugar Run

REACH: 1

RS: 1.108

INPUT

Description: centerline of bike path bridge

Station Elevation Data num= 23									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-277.78	962	-267.1	961	-259.99	960	-255.69	959	-252.78	958
-143.58	958	-139.43	959	-133.53	960	-115.46	960	-90.42	959
-64.29	958	-33.81	957	-21.03	957	-15.69	956	-12.84	955
-9.14	954	-3.12	953.8	9.2	953.8	12.77	954	13.73	955
18.51	960	19.46	961	31.78	962				

Manning's n Values num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-277.78	.03	-115.46	.1	-21.03	.04	13.73	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.03	13.73		224 238.1	220		.1	.3

Ineffective Flow num= 1			
Sta L	Sta R	Elev	Permanent
-277.78	-133.53	960	T

CROSS SECTION

RIVER: Sugar Run

REACH: 1

RS: 1.063

INPUT

Description:

Station Elevation Data num= 20									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-159.9	962	-131.83	961	-114.46	960	-74.46	959	-54.61	958
-18.39	957	-15.34	956	-12.49	955	-9.68	954	-6.5	953.3
8	953.3	13.07	954	57	955	58.98	956	61.02	957
63.33	958	65.76	959	68.08	960	72.15	961	77.83	962

Manning's n Values num= 4							
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-159.9	.1	-18.39	.04	13.07	.1	63.33	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-18.39	13.07		90 127.21	153		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.038

INPUT

Description:

Station Elevation Data num= 17											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-161.23	962	-113.62	961	-100.16	960	-93.74	959	-82.09	958		
-41.8	957	-21.87	956	-19.66	955	-17.71	954	-9.92	953.1		
8.13	953.1	13.02	954	16.57	957	125.76	958	185.8	959		
266.43	960	452.36	961								

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-161.23	.08	-21.87	.04	16.57	.06

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.87	16.57		190 196.26	200		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 1.001

INPUT

Description:

Station Elevation Data num= 22											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-133.78	961	-122.04	960	-98.62	959	-73.82	958	-40.12	957		
-21.81	956	-16.31	955	-13.79	954	-11.34	953	-8	952.6		
7	952.6	8.98	953	11.45	954	13.88	955	16.51	956		
37.01	957	48.77	958	58.07	959	140	958.8	262.73	959		
276.35	959	292.95	960								

Manning's n Values num= 4									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
-133.78	.1	-21.81	.04	16.51	.1	58.07	.05		

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-21.81	16.51		374 367.84	348		.1	.3

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 0.932

INPUT

Description:

Station Elevation Data num= 19	
--------------------------------	--

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-122.91	959	-100.35	958	-71.1	957.2	-55.88	957	-45.98	956
-29.15	955	-20.73	954	-17.25	953	-13.98	952	-8.85	951.9
-7.54	951.9	10	952	11.69	953	13.29	954	14.62	955
15.85	956	17.58	957	20.09	958	23.01	959		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-122.91	.06	-29.15	.04	14.62	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-29.15	14.62		66.13	66.13		.3	.5
Ineffective Flow			num=	1				
Sta L	Sta R	Elev	Permanent					
-122.91	-60.84	959	T					

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.919

INPUT

Description:

Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.55	959	-26.07	955	-23.99	954	-21.78	953	-19.53	952
-13.61	951.8	6.67	951.8	9.43	952	11.28	953	13.11	954
18.3	955	164	955.2	171.92	956	221.24	957	236.7	958
253	959								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.55	.1	-26.07	.04	18.3	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.07	18.3		111	125.86		.3	.5
Ineffective Flow			num=	1				
Sta L	Sta R	Elev	Permanent					
41.82	253	959	T					

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.895

INPUT

Description:

Station Elevation Data num= 24



-38.19	958	-37.56	957	-34.38	956	-29.85	955	-26.22	954
-23.53	953	-19.36	952	-14.89	951	0	950	14.68	951
19.5	952	23.84	953	28.34	954	33.27	955	34.71	956
36.13	957	37.97	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.19	.4	-26.22	.04	28.34	.4

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-26.22	28.34		46.22	46.22		.3	.5

BRIDGE

RIVER: Sugar Run  
 REACH: 1 RS: 0.833

INPUT

Description: Greensward Road  
 Distance from Upstream XS = 2  
 Deck/Roadway Width = 42  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	6								
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
-40	960.5		-35.19	960.5		-35.19	960.5	958	
35.19	959.3	958	35.19	959.3		40	959.2		

Upstream Bridge Cross Section Data

Station Elevation Data	num=	17							
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38.19	958	-37.56	957	-34.38	956	-29.85	955	-26.22	954
-23.53	953	-19.36	952	-14.89	951	0	950	14.68	951
19.5	952	23.84	953	28.34	954	33.27	955	34.71	956
36.13	957	37.97	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.19	.4	-26.22	.04	28.34	.4

Bank Sta:	Left	Right	Coeff	Contr.	Expan.
	-26.22	28.34		.3	.5

Downstream Deck/Roadway Coordinates

num=	6								
Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	
-40	960.5		-35.19	960.5		-35.19	960.5	958	
35.19	959.3	958	35.19	959.3		40	959.2		

Downstream Bridge Cross Section Data

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.45	958	-35.68	957	-33.02	956	-27.94	955	-23.75	954
-19.27	953	-15.28	952	-11.5	951	0	950	11.18	951
15.07	952	19.98	953	26.24	954	34.26	955	35.2	956
36.07	957	37.08	958						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-36.45	.04	-23.75	.04	26.24	.04

Bank Sta: Left Right Coeff Contr. Expan.

-23.75	26.24	.3	.5
--------	-------	----	----

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Piers = 2

Pier Data

Pier Station Upstream= -5 Downstream= -5

Upstream		num= 4		Downstream		num= 4	
Width	Elev	Width	Elev	Width	Elev	Width	Elev
2	945	2	956.21	2.5	956.21	2.5	958
2	945	2	956.21	2.5	956.21	2.5	958

Pier Data

Pier Station Upstream= 5 Downstream= 5

Upstream		num= 4		Downstream		num= 4	
Width	Elev	Width	Elev	Width	Elev	Width	Elev
2	945	2	955.6	2.5	955.6	2.5	958
2	945	2	955.6	2.5	955.6	2.5	958

Number of Bridge Coefficient Sets = 1

Low Flow Methods and Data

Energy  
 Momentum Cd = 1.2  
 Selected Low Flow Methods = Highest Energy Answer

High Flow Method

Pressure and Weir flow  
 Submerged Inlet Cd =  
 Submerged Inlet + Outlet Cd = .8  
 Max Low Cord =

Additional Bridge Parameters

Add Friction component to Momentum  
 Do not add Weight component to Momentum  
 Class B flow critical depth computations use critical depth  
 inside the bridge at the upstream end  
 Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 0.829

INPUT

Description: existing cross section using 2011 1-ft contours

Station Elevation Data num= 17									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.45	958	-35.68	957	-33.02	956	-27.94	955	-23.75	954
-19.27	953	-15.28	952	-11.5	951	0	950	11.18	951
15.07	952	19.98	953	26.24	954	34.26	955	35.2	956
36.07	957	37.08	958						

Manning's n Values num= 3					
Sta	n Val	Sta	n Val	Sta	n Val
-36.45	.04	-23.75	.04	26.24	.04

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-23.75	26.24		345	334.59	315	.3	.5

CROSS SECTION

RIVER: Sugar Run

REACH: 1 RS: 0.766

INPUT

Description: existing cross section using 2011 1-ft contours

Station Elevation Data num= 26									
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-109.69	959	-103.72	957	-101.93	957	-86.6	956	-69.7	955
-48.47	954	-35.52	953	-28.1	952	-12.44	951	-8.66	950
-7.09	949.9	3.88	949.9	10.02	950	12.57	951	14.92	952
17.25	953	55.87	953	113.71	953	202.84	954	215.13	954
270	954	373.68	954	427.29	954	430.93	955	437.21	956

461.74 956.5

Manning's n Values	num=	4
Sta n Val	Sta n Val	Sta n Val
-109.69 .1	-35.52 .04	17.25 .1
		270 .06

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
-35.52	17.25	422.71 422.71	385		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.686

INPUT

Description:

Station Elevation Data	num=	19
Sta Elev	Sta Elev	Sta Elev
-169.97 960	-152.07 954	-146.94 953
-22.88 951	-16.4 950	-8 948
18.1 951	22.04 952	91.05 953
138.47 952.6	151.69 953	166.06 956
		248.89 957
		-83.47 952.2
		8.5 948
		108.81 953.2
		124.51 952

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
-169.97 .1	-35.49 .04	22.04 .1

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff	Contr.	Expan.
-35.49	22.04	510 527.16	488		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.586

INPUT

Description: FEMA Lettered Section B

Station Elevation Data	num=	20
Sta Elev	Sta Elev	Sta Elev
-130.32 956	-124.04 955	-118.04 954
-19.56 951	-12.4 948	-10 946.5
19.24 950	39.48 951	78.64 951.5
159.65 952	196.54 953	303.86 954
		307.4 955
		-110.85 953
		8 946.5
		115.89 951
		146.85 951
		313.74 956

Manning's n Values	num=	3
Sta n Val	Sta n Val	Sta n Val
-130.32 .1	-19.56 .04	19.24 .1



Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-19.56	19.24	367	428.45	359		.1	.3

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.505

INPUT

Description:

Station Elevation Data	num=	20
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-48.58 955 -28.76 954 -23.01 953 -19.37 952 -16.52 951		
-14.76 950 -13.03 949 -9.86 948 -5.94 947 -4 945.5		
5 945.5 7.26 947 10.58 948 13.89 949 19.16 950		
82.26 951 103.48 952 119.59 953 128.84 954 141.43 955		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-48.58 .1 -14.76 .04 19.16 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-14.76	19.16	71	63.38	51.7		.3	.5

CROSS SECTION

RIVER: Sugar Run  
 REACH: 1 RS: 0.493

INPUT

Description:

Station Elevation Data	num=	19
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev		
-24.88 955 -17.89 954 -16.42 952 -8.79 947 -6 945.2		
-1.5 945.2 -1.5 956 1.5 956 1.5 945.2 9 945.2		
12.08 947 15.65 948 22.99 949 30.46 950 52.54 951		
71.12 952 81.7 953 89.85 954 99.35 955		

Manning's n Values	num=	3
Sta n Val Sta n Val Sta n Val		
-24.88 .1 -8.79 .04 12.08 .1		

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
-8.79	12.08	88.64	88.64	88.64		.3	.5

CROSS SECTION



-206.45	952	-174.57	951	-158.53	950	-106.12	949.6	-66.31	950
-58	950.4	-51.3	950	-36.44	949	-28.9	948	-19.48	948
-15.66	947	-13.33	946	-10.8	945	-7	944.4	8	944.4
11.07	945	18.09	949	52.81	949	125.74	950	189.97	951
194.31	952								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-206.45	.1	-19.48	.04	18.09	.1

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	-19.48	18.09		335 519.27	557.2		.1	.3

SUMMARY OF MANNING'S N VALUES

River:Rocky Fork

Reach	River Sta.	n1	n2	n3	n4	n5
n6	n7	n8	n9			
1	887.50	.05	.055	.035	.055	
.05						
1	886.69	.04	.04	.04		
1	886.6	Bridge				
1	886.51	.04	.04	.04		
1	886.4	.1	.04	.1		
1	886.3	.1	.04	.1	.035	
1	886.2	.1	.04	.1		
1	886.1	.1	.04	.1		
1	886	.1	.04	.1		
1	885.2	.1	.04	.1		
1	885.1	.1	.04	.1		
1	884	.1	.04	.1		
1	883.7	.1	.04	.1		

1	883.6	.1	.04	.1	
1	883.5	.06	.04	.06	
1	883.45	Bridge			
1	883.4	.1	.04	.1	
1	883.3	.1	.04	.1	
1	883.2	.1	.04	.1	
1	883.1	.1	.04	.1	
1	883	.1	.04	.1	
1	882	.1	.04	.1	
1	881.9	.1	.04	.1	
1	881.8	.035	.035	.035	
1	881.7	.035	.035	.035	
1	881.6	.1	.04	.1	
1	881.5	.1	.04	.1	
1	881.1	.1	.04	.1	
1	880.66	.1	.04	.1	
1	880.65	.06	.04	.1	
1	880.64	.06	.04	.1	
1	880.62	.06	.04	.1	
1	880.61	.06	.04	.1	
1	880.40	.05	.04	.1	
1	880.30	Bridge			
1	880.20	.04	.04	.04	
1	880.15	.04	.04	.04	
1	880.1	.1	.04	.01	.05

1		879		.1	.035	.1	
1		878		.1	.04	.1	.035
.1		877.5		.1	.04	.1	.035
.1		877.2		.1	.035	.1	.035
.1		877		.1	.035	.1	
1		876.5		.1	.04	.1	
1		876.2		.05	.04	.1	
1		876.1		.05	.04	.1	
1		876		.05	.04	.1	
1		875.9		.1	.04	.1	
1		875.8		.1	.04	.1	
1		874		.05	.035	.055	
1		873.9		.05	.035	.055	
1		873		.055	.05	.055	.05
.035	.055	.05	.055	.05			

River: Sugar Run

Reach	River Sta.	n1	n2	n3	n4
1	3.553	.05	.04	.05	
1	3.550	Lat Struct			
1	3.544	.05	.04	.05	
1	3.539	.05	.04	.05	
1	3.528	.05	.04	.05	
1	3.511	.1	.04	.05	
1	3.493	.1	.04	.04	
1	3.484	.1	.04	.06	
1	3.476	.1	.04	.06	
1	3.441	.1	.04	.06	
1	3.393	.1	.04	.1	
1	3.357	.1	.04	.1	
1	3.314	.1	.04	.1	
1	3.290	.1	.04	.1	
1	3.242	.06	.04	.04	

1	3.22	Culvert			
1	3.196	.05	.04	.1	
1	3.179	.1	.04	.1	
1	3.148	.1	.04	.1	
1	3.075	.1	.04	.1	
1	3.048	.1	.04	.1	
1	2.933	.1	.04	.05	
1	2.855	.1	.04	.1	
1	2.786	.06	.04	.1	
1	2.731	.08	.04	.08	
1	2.70	Culvert			
1	2.688	.08	.04	.08	
1	2.650	.1	.04	.1	
1	2.639	.1	.04	.1	
1	2.616	.1	.04	.1	
1	2.573	.1	.04	.1	
1	2.417	.1	.04	.1	
1	2.340	.1	.04	.1	
1	2.279	.1	.04	.1	
1	2.210	.1	.04	.1	
1	2.150	.09	.04	.09	
1	2.1	Culvert			
1	2.092	.09	.04	.09	
1	2.061	.09	.04	.09	
1	1.982	.09	.04	.09	
1	1.874	.09	.04	.09	
1	1.834	.06	.04	.06	
1	1.83	Bridge			
1	1.826	.06	.04	.06	
1	1.795	.09	.04	.09	
1	1.763	.09	.04	.09	
1	1.714	.09	.04	.08	
1	1.686	.09	.04	.08	
1	1.585	.1	.04	.1	
1	1.519	.1	.04	.1	
1	1.410	.1	.04	.1	
1	1.339	.1	.04	.1	
1	1.246	.1	.04	.1	
1	1.193	.05	.04	.1	
1	1.108	.03	.1	.04	.1
1	1.063	.1	.04	.1	.06
1	1.038	.08	.04	.06	
1	1.001	.1	.04	.1	.05
1	0.932	.06	.04	.1	
1	0.919	.1	.04	.1	
1	0.895	.1	.04	.1	
1	0.857	.1	.04	.06	
1	0.838	.4	.04	.4	
1	0.833	Bridge			
1	0.829	.04	.04	.04	

1	0.766	.1	.04	.1	.06
1	0.686	.1	.04	.1	
1	0.586	.1	.04	.1	
1	0.505	.1	.04	.1	
1	0.493	.1	.04	.1	
1	0.476	.1	.04	.1	
1	0.450	.1	.04	.1	
1	0.429	.1	.04	.1	

SUMMARY OF REACH LENGTHS

River: Rocky Fork

Reach	River Sta.	Left	Channel	Right
1	887.50	132.72	132.72	167
1	886.69	42.9	42.9	42.9
1	886.6	Bridge		
1	886.51	75	103.76	132
1	886.4	330	320.04	300
1	886.3	555	514.42	410
1	886.2	457	445.2	315
1	886.1	472	828.74	815
1	886	625	607.51	445
1	885.2	345	487.99	575
1	885.1	405	521.15	342
1	884	240	308.3	288
1	883.7	355	356.98	351
1	883.6	120	110.05	101
1	883.5	50.79	50.79	50.79
1	883.45	Bridge		
1	883.4	102.12	102.12	102.12
1	883.3	249	261.04	250
1	883.2	315	419.74	383
1	883.1	440	425.44	331
1	883	500	598.03	506
1	882	317	391.59	386
1	881.9	109.39	109.39	109.39
1	881.8	130.97	130.97	130.97
1	881.7	229.13	229.13	229.13
1	881.6	324.74	324.74	324.74
1	881.5	871.8	871.8	871.8
1	881.1	729.81	729.81	729.81
1	880.66	75.45	75.45	75.45
1	880.65	51.92	51.92	51.92
1	880.64	95	124.89	119
1	880.62	79.82	79.82	79.82

1	880.61	104.09	104.09	104.09
1	880.40	293	288.26	312
1	880.30	Bridge		
1	880.20	50	50	50
1	880.15	155	137.53	125
1	880.1	445	533.81	565
1	879	872.31	866.57	827.96
1	878	475	645.93	545
1	877.5	375	598.7	425
1	877.2	570	567	589
1	877	519	546.36	501
1	876.5	431.44	431.44	431.44
1	876.2	66.7	66.7	66.7
1	876.1	600	532.58	350
1	876	715	816.04	640
1	875.9	317	491.31	442
1	875.8	825	844.68	830
1	874	173.87	173.87	173.87
1	873.9	.1	.04	.1
1	873	0	0	0

River: Sugar Run

Reach	River Sta.	Left	Channel	Right
1	3.553	47.82	47.82	47.82
1	3.550	Lat Struct		
1	3.544	25.52	25.52	25.52
1	3.539	66	56.82	45
1	3.528	94	91.37	90
1	3.511	96.26	96.26	96.26
1	3.493	49	47.99	47
1	3.484	45	39.47	34
1	3.476	175	185.84	196
1	3.441	245	253.25	248
1	3.393	160	191.77	210
1	3.357	228	223.28	170
1	3.314	131.16	131.16	131.16
1	3.290	200	250.66	266
1	3.242	241.51	241.51	241.51
1	3.22	Culvert		
1	3.196	86	91.84	88
1	3.179	200	165.71	127
1	3.148	374	384.63	325
1	3.075	115	140.6	174
1	3.048	487	598.33	508
1	2.933	366	421.46	430
1	2.855	360	361.29	320
1	2.786	258	291.74	240



1	2.731	226.56	226.56	226.56
1	2.70	Culvert		
1	2.688	155	204.36	202
1	2.650	54.54	54.54	54.54
1	2.639	110	121.46	120
1	2.616	221	226.88	226
1	2.573	410	825.21	770
1	2.417	350	409.04	369
1	2.340	335	318.38	265
1	2.279	215	366.02	175
1	2.210	260	315.42	285
1	2.150	305.03	305.03	305.03
1	2.1	Culvert		
1	2.092	152	166.03	180
1	2.061	415	415	415
1	1.982	450	573	425
1	1.874	210	210	210
1	1.834	45	45	45
1	1.83	Bridge		
1	1.826	161	161	161
1	1.795	147	172	120
1	1.763	253	258	265
1	1.714	108	145	185
1	1.686	435	532.69	564
1	1.585	375	350.57	282
1	1.519	570	575.72	550
1	1.410	375	373.43	248
1	1.339	300	494.21	380
1	1.246	279.18	279.18	279.18
1	1.193	400	449.11	360
1	1.108	224	238.1	220
1	1.063	90	127.21	153
1	1.038	190	196.26	200
1	1.001	374	367.84	348
1	0.932	66.13	66.13	66.13
1	0.919	111	125.86	146
1	0.895	201.8	201.8	201.8
1	0.857	100.28	100.28	100.28
1	0.838	46.22	46.22	46.22
1	0.833	Bridge		
1	0.829	345	334.59	315
1	0.766	422.71	422.71	385
1	0.686	510	527.16	488
1	0.586	367	428.45	359
1	0.505	71	63.38	51.7
1	0.493	88.64	88.64	88.64
1	0.476	150	143.04	140
1	0.450	70	105	125
1	0.429	335	519.27	557.2

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
 River: Rocky Fork

Reach	River Sta.	Contr.	Expan.
1	887.50	.1	.3
1	886.69	.3	.5
1	886.6	Bridge	
1	886.51	.1	.3
1	886.4	.1	.3
1	886.3	.1	.3
1	886.2	.1	.3
1	886.1	.1	.3
1	886	.1	.3
1	885.2	.1	.3
1	885.1	.1	.3
1	884	.1	.3
1	883.7	.1	.3
1	883.6	.1	.3
1	883.5	.3	.5
1	883.45	Bridge	
1	883.4	.3	.5
1	883.3	.1	.3
1	883.2	.1	.3
1	883.1	.1	.3
1	883	.1	.3
1	882	.1	.3
1	881.9	.1	.3
1	881.8	.1	.3
1	881.7	.3	.5
1	881.6	.1	.3
1	881.5	.1	.3
1	881.1	.1	.3
1	880.66	.1	.3
1	880.65	.1	.3
1	880.64	.1	.3
1	880.62	.1	.3
1	880.61	.1	.3
1	880.40	.1	.3
1	880.30	Bridge	
1	880.20	.3	.5
1	880.15	.3	.5
1	880.1	.1	.3
1	879	.1	.3
1	878	.1	.3
1	877.5	.1	.3

1	877.2	.1	.3
1	877	.1	.3
1	876.5	.1	.3
1	876.2	.1	.3
1	876.1	.1	.3
1	876	.1	.3
1	875.9	.1	.3
1	875.8	.1	.3
1	874	.1	.3
1	873.9	.1	.3
1	873	.1	.3

River: Sugar Run

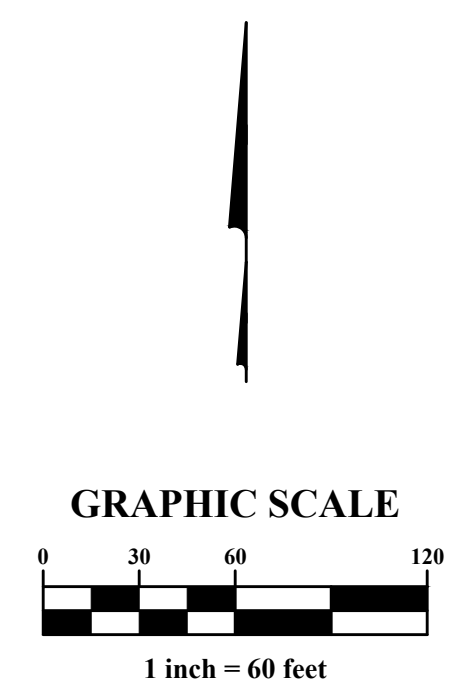
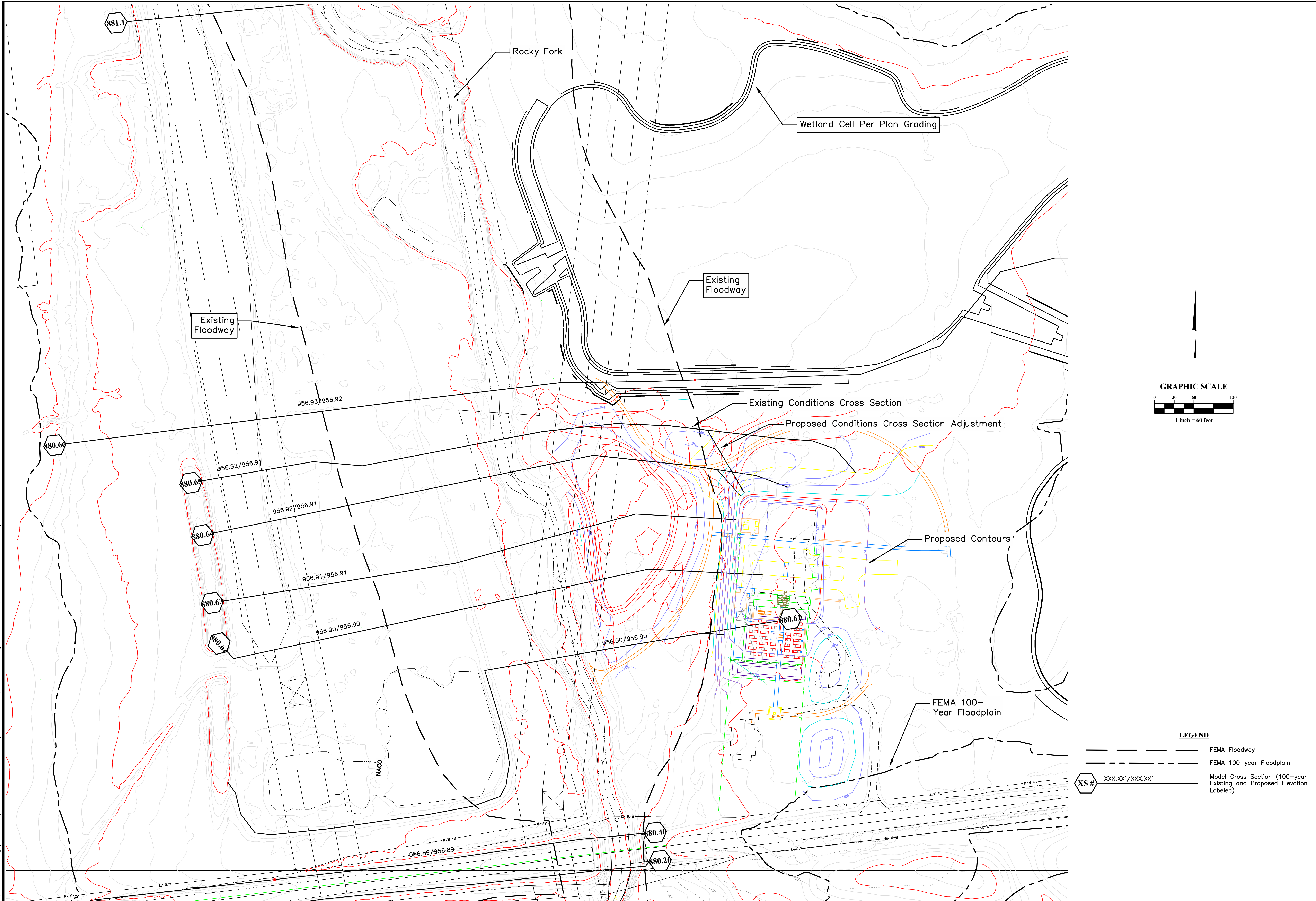
Reach	River Sta.	Contr.	Expan.
1	3.553	.1	.3
1	3.550	Lat Struct	
1	3.544	.1	.3
1	3.539	.3	.5
1	3.528	.1	.3
1	3.511	.1	.3
1	3.493	.1	.3
1	3.484	.3	.5
1	3.476	.3	.5
1	3.441	.1	.3
1	3.393	.1	.3
1	3.357	.1	.3
1	3.314	.1	.3
1	3.290	.1	.3
1	3.242	.3	.5
1	3.22	Culvert	
1	3.196	.3	.5
1	3.179	.1	.3
1	3.148	.1	.3
1	3.075	.1	.3
1	3.048	.1	.3
1	2.933	.1	.3
1	2.855	.1	.3
1	2.786	.1	.3
1	2.731	.3	.5
1	2.70	Culvert	
1	2.688	.3	.5
1	2.650	.1	.3
1	2.639	.1	.3
1	2.616	.1	.3
1	2.573	.1	.3
1	2.417	.1	.3
1	2.340	.1	.3

1	2.279	.1	.3
1	2.210	.1	.3
1	2.150	.3	.5
1	2.1	Culvert	
1	2.092	.3	.5
1	2.061	.1	.3
1	1.982	.1	.3
1	1.874	.3	.5
1	1.834	.3	.5
1	1.83	Bridge	
1	1.826	.3	.5
1	1.795	.1	.3
1	1.763	.1	.3
1	1.714	.1	.3
1	1.686	.1	.3
1	1.585	.1	.3
1	1.519	.1	.3
1	1.410	.1	.3
1	1.339	.1	.3
1	1.246	.1	.3
1	1.193	.1	.3
1	1.108	.1	.3
1	1.063	.1	.3
1	1.038	.1	.3
1	1.001	.1	.3
1	0.932	.3	.5
1	0.919	.3	.5
1	0.895	.1	.3
1	0.857	.1	.3
1	0.838	.3	.5
1	0.833	Bridge	
1	0.829	.3	.5
1	0.766	.1	.3
1	0.686	.1	.3
1	0.586	.1	.3
1	0.505	.3	.5
1	0.493	.3	.5
1	0.476	.1	.3
1	0.450	.1	.3
1	0.429	.1	.3

**APPENDIX F:**  
**Floodplain Workmap**



J:\20220861\Drawings\04Sheets\Exhibits\_20200644\_Floodplain\_Base\_map\_rev\_rmba.dwg Last Saved:2/17/2023 3:56:51 PM By:DTURNEY Plot Date:2/21/2023 12:00:12 PM



**LEGEND**

	FEMA Floodway
	FEMA 100-year Floodplain
	Model Cross Section (100-year Existing and Proposed Elevation Labeled)

REVISIONS	MARK	DATE	DESCRIPTION

CITY OF NEW ALBANY, FRANKLIN COUNTY, OHIO  
FOR  
FLOODPLAIN WORKMAP  
**TAYLOR FARM PHASE 2**

Engineering & Mapping, Inc.  
 Engineers • Surveyors • Planners • Scientists  
 5800 New Albany Road, Columbus, OH 43254  
 Phone: 614.753.8500 Fax: 614.753.8508  
 emtinc.com

DATE	February 2023
SCALE	1" = 60'
JOB NO.	2022-0861
SHEET	1/1





**Planning Commission Staff Report  
March 20, 2023 Meeting**

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**6984 LAMBTON PARK ROAD  
POOL LOCATION VARIANCE**

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LOCATION: 6984 Lambton Park (PID: 222-004129)  
APPLICANT: Hidden Creek Landscape, Michael L Crommes  
REQUEST: Variance  
ZONING: Comprehensive Planned Unit Development: Edgemont  
STRATEGIC PLAN: Residential  
APPLICATION: VAR-29-2023

Review based on: Application materials received on February 17, 2023

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*Staff report prepared by Sierra Cratic-Smith, Planner*

**I. REQUEST AND BACKGROUND**

The applicant requests a variance to section 5(A) of the Edgemont Subarea 1-B(5)(a) zoning text to allow a private swimming pool to be located in the side yard at 6984 Lambton Park. The text states “all swimming pools/spas shall be located in the rear yard, within the building line of the site, completely enclosed by fencing and screened from adjoining properties.”

**II. SITE DESCRIPTION & USE**

The property is 6.172 acres in size and contains a single-family home. The lot is located in the New Albany Country Club Edgemont subdivision. The house is one of three large lots along the north side of Lambton Park Road. The neighboring properties consist of the golf course to the north and single-family homes surrounding the rest of the property.

**III. ASSESSMENT**

The application complies with application submittal requirements in C.O. 1113.03, and is considered complete. In accordance with C.O. 1113.05(b), all property owners within 200 feet of the subject property in question have been notified of the request via mail.

*Criteria*

The standard for granting of an area variance is set forth in the case of *Duncan v. Village of Middlefield*, 23 Ohio St.3d 83 (1986). The Board must examine the following factors when deciding whether to grant a landowner an area variance:

All of the factors should be considered and no single factor is dispositive. The key to whether an area variance should be granted to a property owner under the “practical difficulties” standard is whether the area zoning requirement, as applied to the property owner in question, is reasonable and practical.

1. *Whether the property will yield a reasonable return or whether there can be a beneficial use of the property without the variance.*
2. *Whether the variance is substantial.*

3. *Whether the essential character of the neighborhood would be substantially altered or adjoining properties suffer a “substantial detriment.”*
4. *Whether the variance would adversely affect the delivery of government services.*
5. *Whether the property owner purchased the property with knowledge of the zoning restriction.*
6. *Whether the problem can be solved by some manner other than the granting of a variance.*
7. *Whether the variance preserves the “spirit and intent” of the zoning requirement and whether “substantial justice” would be done by granting the variance.*

Plus, the following criteria as established in the zoning code (Section 1113.06):

8. *That special conditions and circumstances exist which are peculiar to the land or structure involved and which are not applicable to other lands or structures in the same zoning district.*
9. *That a literal interpretation of the provisions of the Zoning Ordinance would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district under the terms of the Zoning Ordinance.*
10. *That the special conditions and circumstances do not result from the action of the applicant.*
11. *That granting the variance requested will not confer on the applicant any special privilege that is denied by the Zoning Ordinance to other lands or structures in the same zoning district.*
12. *That granting the variance will not adversely affect the health and safety of persons residing or working in the vicinity of the proposed development, be materially detrimental to the public welfare, or injurious to private property or public improvements in the vicinity.*

#### **IV. EVALUATION**

##### **A variance to Section 5(A) of the Edgemont Subarea 1-B zoning text to allow a private swimming pool to be located in the side yard.**

1. Section 1-B(5)(a) of the zoning text requires “all swimming pools/spas shall be located in the rear yard, within the building line of the site, and completely enclosed by fencing and screened from adjoining properties.” This variance requests to allow a private swimming pool to be located in the side yard.
2. The city codified ordinance permits pools to be located in the side yard. However, the Edgemont zoning text is more restrictive than the city typical standards. Therefore, the variance preserves the spirit and intent of the city pool regulations of locating pools in the same area as other accessory structures in the side and rear of principle structures.
3. This variance does not appear substantial considering the large size of the lot and its location in conjunction to the home. The lot is 6.172 acres large making this parcel one of the largest in the Country Club subdivision. Compared to the pool which is 20 feet by 50 feet in size which covers less than one percent of the lot. The pool is located 200 +/- feet from the northern property line and 152 +/- feet from the west property line. As a result, the pool is located at a much greater distance from the parcel lines and roads.
4. The character of the neighborhood would not be substantially alter considering the pool will be surrounded by a brick and mortar wall spanning of 6 feet in height to provide significant screening. Additionally, there is a double row of evergreen shrubs along the west property line providing screening.
5. There are special conditions that apply to this specific property due to the shape and topography of the lot. According to the site plan, this lot is shaped like a flag which creates a greater abundance of side yard space and less rear yard compared to a typical rectangular shaped lot. In addition, the rear yard contour lines are steeper on the north and northeast side of the property where the zoning requires the pool to be located. This steep geography



complicates construction of and access to the pool. However, the relocation of the pool allows for access and construction to connect easier to the home.

6. This variance would not adversely affect the delivery of government services.
7. The granting of this variance will not adversely affect the health and safety of persons residing or working in the vicinity.

## V. SUMMARY

This variance is not substantial considering the size of the property at 6.172 acres which shows the pool being located over 200 feet from the northern property line and 152 feet from the west property line. Additionally, other conditions of the property like the topography prevents ease of accessibility and construction of the pool in the rear. This is because behind the home, the topography is significantly steeper north than it is on the west side of the property. Furthermore, the addition of the 6-foot brick wall to be constructed around the pool allows for significant screening and privacy. Therefore, the pool's proposed location seems to be reasonable due to the relative isolated location because of the screening and size of the lot.

## VI. ACTION

Should the Board of Zoning Appeals find that the application has sufficient basis for disapproval, finding the following motion is appropriate.

**Move to approve application VAR-29-2023 based on the findings in the staff report (conditions of approval may be added)**

### Approximate Site Location:

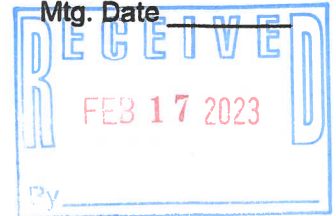


Source: NearMap



Community Development Planning Application

Permit # \_\_\_\_\_  
Board \_\_\_\_\_  
Mtg. Date \_\_\_\_\_



Project Information	Site Address <u>6984 LAMBTON PARK ROAD</u>																																																																								
	Parcel Numbers <u>222-004129-00</u>																																																																								
	Acres <u>0.17</u> # of lots created <u>1</u>																																																																								
	<table border="1"> <thead> <tr> <th>Choose Application Type</th> <th colspan="5">Circle all Details that Apply</th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Appeal</td> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td><input type="checkbox"/> Certificate of Appropriateness</td> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td><input type="checkbox"/> Conditional Use</td> <td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td><input type="checkbox"/> Development Plan</td> <td>Preliminary</td> <td>Final</td> <td>Comprehensive</td> <td colspan="2">Amendment</td> </tr> <tr> <td><input type="checkbox"/> Plat</td> <td>Preliminary</td> <td>Final</td> <td colspan="3"></td> </tr> <tr> <td><input type="checkbox"/> Lot Changes</td> <td>Combination</td> <td>Split</td> <td colspan="3">Adjustment</td> </tr> <tr> <td><input type="checkbox"/> Minor Commercial Subdivision</td> <td colspan="2"></td> <td colspan="3"></td> </tr> <tr> <td><input type="checkbox"/> Vacation</td> <td>Easement</td> <td colspan="3">Street</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Variance</td> <td colspan="5"></td> </tr> <tr> <td><input type="checkbox"/> Extension Request</td> <td colspan="5"></td> </tr> <tr> <td><input type="checkbox"/> Zoning</td> <td>Amendment (rezoning)</td> <td colspan="4">Text Modification</td> </tr> </tbody> </table>	Choose Application Type	Circle all Details that Apply					<input type="checkbox"/> Appeal						<input type="checkbox"/> Certificate of Appropriateness						<input type="checkbox"/> Conditional Use						<input type="checkbox"/> Development Plan	Preliminary	Final	Comprehensive	Amendment		<input type="checkbox"/> Plat	Preliminary	Final				<input type="checkbox"/> Lot Changes	Combination	Split	Adjustment			<input type="checkbox"/> Minor Commercial Subdivision						<input type="checkbox"/> Vacation	Easement	Street				<input checked="" type="checkbox"/> Variance						<input type="checkbox"/> Extension Request						<input type="checkbox"/> Zoning	Amendment (rezoning)	Text Modification			
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<input type="checkbox"/> Extension Request																																																																									
<input type="checkbox"/> Zoning	Amendment (rezoning)	Text Modification																																																																							
	Description of Request: <u>APPROVAL OF A 20'X50' IN-GROUND CONCRETE SWIMMING POOL IN A 'SIDE YARD' LOCATION.</u>																																																																								
Contacts	Property Owner's Name: <u>HAROLD &amp; NATHALIE BEVIS</u>																																																																								
	Address: <u>200 W. MAIN ST</u> City, State, Zip: <u>NEW ALBANY, OHIO, 43054</u> Phone number: <u>312-758-4134</u> Fax: <u>-</u> Email: <u>HAROLD.BEVIS@CVGRP.COM</u>																																																																								
	Applicant's Name: <u>HIDDEN CREEK MICHAEL L. CROMMIES</u> Address: <u>3940 SCIOTO DARTY CREEK ROAD</u> City, State, Zip: <u>HILLIAND, OH 43020</u> Phone number: <u>740-927-2071, 614-205-2688 (MOBILE)</u> Email: <u>mike@capitolcitypools.com</u>																																																																								
Signature	Site visits to the property by City of New Albany representatives are essential to process this application. The Owner/Applicant, as signed below, hereby authorizes Village of New Albany representatives, employees and appointed and elected officials to visit, photograph and post a notice on the property described in this application. I certify that the information here within and attached to this application is true, correct and complete.																																																																								
	Signature of Owner <u>[Signature]</u> Date: <u>2/15/23</u> Signature of Applicant <u>[Signature]</u> Date: <u>2/14/23</u>																																																																								





**HIDDEN CREEK**  
**LANDSCAPING INC.**

February 16, 2023

The City of New Albany  
Community Development  
Planning Commission

Re: Harold & Nathalie Bevis  
6984 Lambton Park Road  
New Albany, OH 43054

Please find this application specific to the referenced address above. On behalf of the Owner, Hidden Creek Landscaping, Inc. Pool Division (formerly Capital City Pools, Inc.) is requesting a variance for a side-yard, in-ground 20' x 50' concrete swimming pool. City ordinance requires pools to be in the rear yard of lots.

The over six-acre estate lot is naturally vegetated to the north and along the drive approach to the house, which is oriented in a lineal design running east and west. The house is situated along the 'high' ridge of the lot. A Columbia Gas transmission easement accounts for most of the western side of the lot, with the New Albany Country Club golf course to the south. The Owner contacted us with a desire to install a custom concrete swimming pool to address the 'special needs' of their daughter and family. It is of utmost importance that her safety be prioritized. The proposed pool side-yard location better serves these needs at this west end of the house. The Owner has expressed concerns over multiple errant golf balls coming onto the property, this proposed location moves the pool further from the golf course. The Owner is proposing to construct a 6' tall brick masonry wall w/ columns around the perimeter of the pool. We can provide wall, column and gate details as required. This barrier will be gated per applicable codes, and the swimming pool will have an ASTM/UL Coverstar automatic pool cover. The masonry wall will prevent views of the pool from the golf course and surrounding properties. Supplemental landscaping will soften the wall(s) and add natural buffering where necessary.

Thank you for your time and consideration of this variance request.

Regards,  
Michael L. Crommes,  
Design & Project Management  
Hidden Creek Pool Division

**DO NOT DETACH**

 <b>Instrument Number: 202007210104786</b> <b>Recorded Date: 07/21/2020 10:55:54 AM</b>	
 Daniel J. O'Connor Jr. Franklin County Recorder 373 South High Street, 18th Floor Columbus, OH 43215 (614) 525-3930 <a href="http://Recorder.FranklinCountyOhio.gov">http://Recorder.FranklinCountyOhio.gov</a> <a href="mailto:Recorder@FranklinCountyOhio.gov">Recorder@FranklinCountyOhio.gov</a>	
<b>Return To (Simplifile):</b> Crown Search Services LTD 2323 W 5th Ave Ste 144  Columbus, OH 43204-4997	
Simplifile	
<b>Transaction Number: T20200061132</b> <b>Document Type: DEED</b> <b>Document Page Count: 4</b>	
<b>Submitted By (Simplifile):</b> Crown Search Services LTD 2323 W 5TH AVE STE 144  Columbus, OH 43204-4997	
Simplifile	
<b>First Grantor:</b> CLARIOT LAMBTON PARK LLC	<b>First Grantee:</b> HAROLD CLIFFORD BEVIS
<b>Fees:</b> Document Recording Fee: \$34.00 Additional Pages Fee: \$16.00 <b>Total Fees:</b> \$50.00 <b>Amount Paid:</b> \$50.00 <b>Amount Due:</b> \$0.00	<b>Instrument Number: 202007210104786</b> <b>Recorded Date: 07/21/2020 10:55:54 AM</b>

OFFICIAL RECORDING COVER PAGE

**DO NOT DETACH**

THIS PAGE IS NOW PART OF THIS RECORDED DOCUMENT

NOTE: If the document data differs from this cover sheet, please first check the document on our website to ensure it has been corrected. The document data always supersedes the cover page.

If an error on the cover page appears on our website after review please let our office know.

COVER PAGE DOES NOT INCLUDE ALL DATA, PLEASE SEE INDEX AND DOCUMENT FOR ANY ADDITIONAL INFORMATION.

12750 MD

**TRANSFERRED**  
 07-21-2020  
 MICHAEL STINZIANO  
 AUDITOR  
 FRANKLIN COUNTY, OHIO

Conveyance
Mandatory: \$1360.00
Permissive: \$2720.00
MICHAEL STINZIANO FRANKLIN COUNTY AUDITOR

Order Number: 20721799-UAR

Crown - TTA - A

**SURVIVORSHIP DEED**

Clariot Lambton Park LLC, an Ohio limited liability company, for valuable consideration paid, grants, with general warranty covenants to **Harold Clifford Bevis and Nathalie Dora Bevis, husband and wife, for their joint lives, remainder to the survivor of them**, whose tax mailing address is 200 West Main Street, Unit 314, New Albany, Ohio 43054 the following real property:

**"See Exhibit "A" attached hereto and made a part hereof...."**

Parcel Number: 222-004129-00

Property Address: 6984 Lambton Park Road, New Albany, Ohio 43054

Except for the following and subject to all of which this conveyance is made: legal highways; zoning ordinances; real estate taxes and assessments which are now or may hereafter become a lien on said premises; covenants, conditions, restrictions and easements of record; and all coal, oil, gas, and other mineral rights and interests previously transferred or reserved of record.

Prior Instrument Reference: Instrument Number 201710020136766, Recorder's Office, Franklin County, Ohio.

Clariot Lambton Park Deed



Executed this 16<sup>th</sup> day of July, 2020.

File No : 20721799-UAR

Clariot Lambton Park LLC,  
an Ohio limited liability company

BY: *Andrew F. Bohutinsky*  
Andrew F. Bohutinsky  
Its: Managing Member

State of Ohio  
County of Franklin ss:

This is an acknowledgment. No oath or affirmation was administered to the signer with regard to the notarial act.

The foregoing instrument was acknowledged before me this 16<sup>th</sup> day of July, 2020, by Andrew F. Bohutinsky, Managing Member, of Clariot Lambton Park LLC, an Ohio limited liability company, on behalf of said company.

In Testimony Thereof, I have hereunto subscribed my name and affixed my official seal on the day and year last aforesaid.



MICHAEL WHITNEY  
Attorney At Law  
Notary Public, State of Ohio  
My commission has no expiration date  
Sec. 147.03 R C

*Michael Whitney*  
Notary Public

This instrument prepared by Magnuson & Barone Attorneys at Law

**EXHIBIT A**

Situated in the State of Ohio, County of Franklin, City of New Albany, Quarter Township 3, Township 2, Range 16, United States Military Lands and being 0.382 acre out of that tract as conveyed to The New Albany Company LLC of record in Instrument Number 200008020153496, and 5.790 acres out of those tracts as conveyed to The New Albany Company of record in Official Record 15938106, 12850104, 11424G07, 13066G10, and 13066G11, (all references refer to the records of the Recorder's Office, Franklin County, Ohio) and described as follows:

Beginning, for reference, at the centerline intersection of Lambton Park Road with Columbus-Millersburg Road (Johnstown Road) of record in Plat Book 86, Page 83;

thence with the centerline of said Lambton Park Road, the following courses;

South 57° 09' 28" East, a distance of 140.00 feet to a point of curvature;

with a curve to the left, having a central angle of 33° 34' 58" and a radius of 450.00 feet, a chord bearing and distance of South 73° 56' 57" East, 260.00 feet to a point of tangency;

North 89° 15' 34" East, a distance of 100.00 feet to a point of curvature;

with a curve to the right, having a central angle of 06° 23' 17" and a radius of 450.00 feet, a chord bearing and distance of South 87° 32' 48" East, 50.15 feet to a point;

thence North 05° 38' 50" East leaving said centerline, a distance of 30.00 feet to an iron pin set in the northerly right-of-way line of said Lambton Park Road, the True Point of Beginning;

thence across said New Albany Company tracts, the following courses:

North 24° 42' 19" East, a distance of 611.86 feet to an iron pin set;

South 72° 01' 18" East, a distance of 8.13 feet to an iron pin set;

South 65° 36' 38" East, a distance of 231.60 feet to an iron pin set;

South 71° 41' 02" East, a distance of 22.05 feet to an iron pin set;

South 76° 25' 13" East, a distance of 16.97 feet to an iron pin set;

South 82° 48' 58" East, a distance of 103.60 feet to an iron pin set;

South 70° 35' 21" East, a distance of 45.66 feet to an iron pin set;

South 69° 28' 12" East, a distance of 46.05 feet to an iron pin set;

South 47° 09' 11" East, a distance of 88.24 feet to an iron pin set;

South 32° 05' 53" East, a distance of 61.18 feet to an iron pin set;

South 24° 30' 17" East, a distance of 89.58 feet to an iron pin set;

South 61° 01' 08" West, a distance of 273.24 feet to an iron pin set;

North 85° 33' 44" West, a distance of 334.68 feet to an iron pin set;

South 03° 40' 16" West, a distance of 203.41 feet to an iron pin set on a curve in said northerly right-of-way;

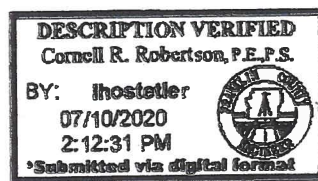
thence with said northerly right-of-way line and said curve to the left, having a central angle of 32° 31' 36" and a radius of 480.00 feet, a chord bearing and distance of North 68° 05' 22" West, 268.85 feet to the True Point of Beginning and containing 6.172 acres of land, more or less.

The bearings are based on the same system as "Lambton Park Road and Columbus-Millersburg Road Dedication and Easements" of record in Plat Book 86, Page 83.

For Informational Purposes only:

Commonly Known As: 8984 Lambton Park Road, New Albany, OH 43054

Tax Parcel ID: 222-004129-00



AUDITOR OFFICE

SEARCH

ONLINE TOOLS

REFERENCE

CONTACT MICHAEL

Summary Parcel ID: 222-004129-00  
BEVIS NATHALIE DORA

Land Profile

Residential

Commercial

Improvements

Permits

Mapping

Sketch

Photo

StreetSmart

Aerial Photos

Transfers

BOR Status

CAUV Status

Tax & Payments

Tax Distribution

Tax Calculators

Value History

Rental Contact

Incentive Details

Quick Links





AUDITOR OFFICE

SEARCH

ONLINE TOOLS

REFERENCE

CONTACT MICHAEL

Summary	Parcel ID: 222-004129-00 BEVIS NATHALIE DORA	Map Routing: 222-0075F -002-04 6984 LAMBTON PARK RD
Land Profile	<b>OWNER</b>	
Residential		
Commercial	Owner	BEVIS NATHALIE DORA BEVIS HAROLD CLIFFORD 6984 LAMBTON PARK RD NEW ALBANY OH 43054 <a href="#">Submit Mailing Address Correction Request</a>
Improvements	Owner Mailing / Contact Address	
Permits		
Mapping	Site (Property) Address	6984 LAMBTON PARK RD <a href="#">Submit Site Address Correction Request</a>
Sketch		
Photo		
StreetSmart	Legal Description	6984 LAMBTON PARK ROAD R16 T2 1/4T3 6.172 ACRES
Aerial Photos	Calculated Acres	6.17
Transfers	Legal Acres	6.172
BOR Status		
CAUV Status	Tax Bill Mailing	<a href="#">View or Change on the Treasurer's Website</a> If you have recently satisfied or refinanced your mortgage, please visit the above link to review your tax mailing address to ensure you receive your tax bill and other important mailings.
Tax & Payments		
Tax Distribution	Parcel Permalink	<a href="https://apps.franklincountyauditor.com/redir/Link/Parcel/222-004129-00">https://apps.franklincountyauditor.com/redir/Link/Parcel/222-004129-00</a>
Tax Calculators		
Value History	eAlerts	<a href="#">Sign Up for or Manage Property eAlerts</a> The Auditor's office provides a Property eAlerts tool through which a property owner can sign up to receive an automated email alert whenever a change in owner or value is made to their property record. Click on the above button to sign up for or manage your Property eAlerts.
Rental Contact		
Incentive Details		
Quick Links		

Tools

[View Google Map](#)  
[Print Parcel Summary](#)

**MOST RECENT TRANSFER**

Transfer Date	JUL-21-2020
Transfer Price	\$1,360,000
Instrument Type	SU
Parcel Count	1

**2021 TAX STATUS**

Property Class	R - Residential
Land Use	501 - VAC UNPLT RES LAND: 0-9.99 AC
Tax District	222 - PLAIN TWP-NEW ALBANY CORP
School District	2508 - NEW ALBANY-PLAIN LSD [SD Income Tax]
City/Village	NEW ALBANY CORP
Township	PLAIN TWP
Appraisal Neighborhood	05102
Tax Lien	No
CAUV Property	No
Owner Occ. Credit	2021: No 2022: No
Homestead Credit	2021: No 2022: No
Rental Registration	No
Rental Exception	No
Board of Revision	No
Zip Code	43054
Pending Exemption	No

**2021 AUDITOR'S APPRAISED VALUE**

1 of 1  
[Return to Search Results](#)

Actions

- [Neighborhood Sales](#)
- [Proximity Search](#)
- [Printable Version](#)
- [Custom Report Builder](#)

Reports

- [Proximity Report](#)
- [Map Report](#)
- [Parcel Summary](#)
- [Parcel Detail](#)

Go

11/29/2021



© All Pictometry

BEVIS, NATHALIE DORA | 6984 LAMBTON PARK RD | NEW ALBANY, OH





LOOKING WEST/S.W.  
TOWARD  
6958 LAMBTON PARK ROAD



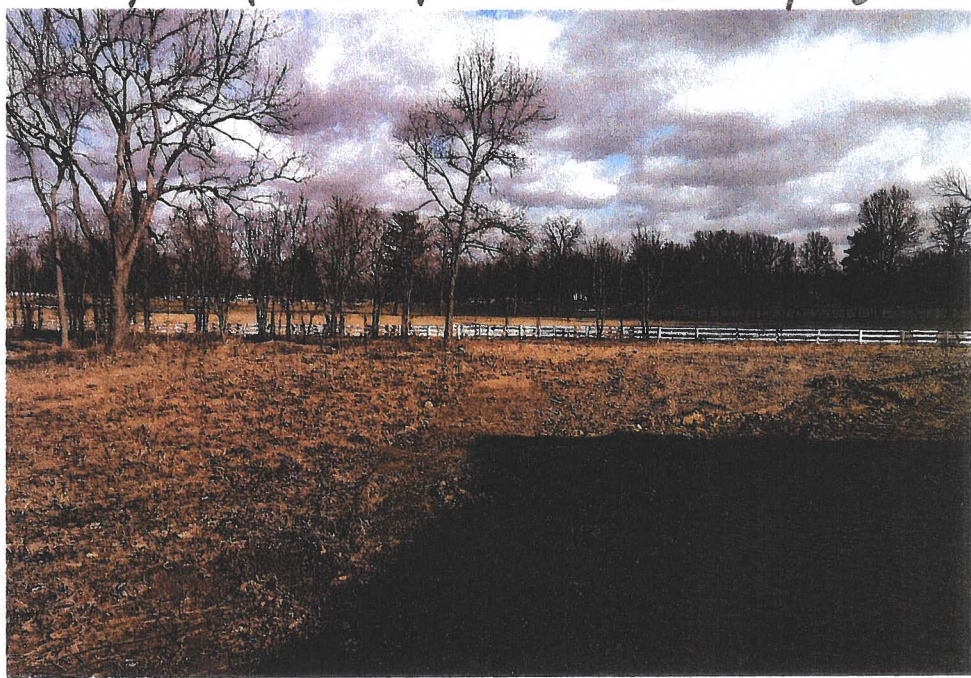
LOOKING NORTH  
NORTHWEST



LOOKING SOUTH



TOWARD GOLF COURSE (NORTH)



WEST END OF HOUSE





Date of Review: 09/20/21

Submission #: 5

ARCHITECTURAL REVIEW COMMITTEE		
<b>Owner:</b> Harold Bevis	<b>Address:</b> 6984 Lambton Park Road	<b>Sect. &amp; Lot:</b> 18.2
<b>Type:</b> New Construction - Final	<b>Submitter:</b> Todd Parker	<b>Company:</b> F5 Design/Architecture Inc.
<b>ARC Authorization</b> <i>Digital Approval</i> <i>Release of Review Notes</i>	<b>Contact Email:</b> tparker@f5design.com	<b>Contact Phone:</b> (614) 937-4894
<p>Drawing Review is for the sole purpose of verifying aesthetic conformance with New Albany Country Club Community Design Guidelines, and does not address structural integrity, life safety issues, code compliance or technical applications.</p> <p>Each applicant is responsible for specifically identifying elements of its plans which do not conform to applicable design guidelines and requirements of the ARC and/or the Association. Any element of a plan which fails to conform to (or deviates from) such design guidelines and requirements must be clearly marked and highlighted on submitted plans or, if such markings or highlights are impractical, then they shall be detailed in a separate written document signed by the applicant or its agent. Nonconformities with or deviations from the applicable design guidelines and requirements that have not been identified in the plans or elements that have been approved by the ARC shall be deemed to be disapproved without any further action by the ARC being necessary. In such a circumstance, the ARC shall retain all enforcement rights to prevent construction of and/or cause the removal of the nonconforming condition.</p>		
<b>THE NEW ALBANY COUNTRY CLUB COMMUNITY ARC</b>		

<b>Elevations</b>	<b>Other</b>	<b>Site Plan</b>
<input type="checkbox"/> Approved	<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Approved
<input type="checkbox"/> Approved As Noted	<input type="checkbox"/> Approved As Noted	<input type="checkbox"/> Approved As Noted
<input type="checkbox"/> Resubmit	<input type="checkbox"/> Resubmit	<input type="checkbox"/> Resubmit
<b>Exterior Materials</b>	<b>Landscape</b>	
<input type="checkbox"/> Approved	<input type="checkbox"/> Approved	<input type="checkbox"/> Approved As Noted
<input type="checkbox"/> Approved As Noted	<input type="checkbox"/> Resubmit	<input type="checkbox"/> Plan Is Required
<input type="checkbox"/> Resubmit		

Your submission has been reviewed and the comments are as follows:

Your submission was approved at yesterdays meeting 09/20/21.

From: [Squarespace](#)  
 To: [NACCCA ARC](#)  
 Subject: Form Submission - NACCCA | ARC Submission Form  
 Date: Wednesday, September 15, 2021 3:58:49 PM

Sent via form submission from [New Albany Country Club Community Association](#)

Name: Todd Parker

Company: F5 Design/Architecture Inc.

Phone: (614) 937-4894

Email: tparker@f5design.com

Name: Harold Bevis

Phone: (312) 758-4134

Email: nbtamale@yahoo.ca

Street Number: 6984

Street Name: lambton park Road

Section Number: 18

Lot Number: 2

Submission Type: Re-Submission

Project Type: New Home Construction (1-5 Reviews) | \$600.00

Do you plan on submitting Supplemental Materials?: Yes





RESIDENTIAL ENERGY REQUIREMENTS	
1.	...
2.	...
3.	...
4.	...
5.	...

**GENERAL NOTES**

1. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
2. ALL FINISHES ARE TO BE AS NOTED.
3. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE AS NOTED.
4. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL RESIDENTIAL CODE BOOK (IRC) AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
5. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
6. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE (IMC).
7. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (IPC).
8. ALL CONCRETE SHALL BE 3000 PSI STRENGTH.
9. ALL FOUNDATION SHALL BE 12" MINIMUM THICKNESS.
10. ALL EXTERIOR WALLS SHALL BE 8" MINIMUM THICKNESS.
11. ALL ROOFING SHALL BE AS NOTED.
12. ALL SLOPES SHALL BE AS NOTED.
13. ALL UTILITIES SHALL BE AS NOTED.
14. ALL SETBACKS SHALL BE AS NOTED.
15. ALL DISTANCES SHALL BE AS NOTED.
16. ALL ANGLES SHALL BE AS NOTED.
17. ALL CURVES SHALL BE AS NOTED.
18. ALL TOLERANCES SHALL BE AS NOTED.
19. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL BUILDING DEPARTMENT.
20. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL HEALTH DEPARTMENT.
21. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL FIRE DEPARTMENT.
22. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL POLICE DEPARTMENT.
23. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PUBLIC UTILITIES COMPANY.
24. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL WATER SUPPLY AGENCY.
25. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL SEWERAGE AND WASTE WATER TREATMENT PLANT.
26. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.
27. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ENVIRONMENTAL AGENCY.
28. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL HISTORIC PRESERVATION COMMISSION.
29. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ZONING COMMISSION.
30. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PLANNING COMMISSION.
31. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL COMMUNITY DEVELOPMENT DEPARTMENT.
32. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ECONOMIC DEVELOPMENT DEPARTMENT.
33. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TOURISM DEPARTMENT.
34. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL CULTURAL AFFAIRS DEPARTMENT.
35. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL RECREATION DEPARTMENT.
36. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PARKS AND RECREATION DEPARTMENT.
37. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL LAND USE DEPARTMENT.
38. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL INFRASTRUCTURE DEPARTMENT.
39. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.
40. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL UTILITIES DEPARTMENT.
41. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL WATER SUPPLY DEPARTMENT.
42. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL SEWERAGE AND WASTE WATER TREATMENT DEPARTMENT.
43. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.
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50. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL SEWERAGE AND WASTE WATER TREATMENT DEPARTMENT.

**GENERAL SITE NOTES**

1. ALL DIMENSIONS ARE TO FACE UNLESS NOTED OTHERWISE.
2. ALL FINISHES ARE TO BE AS NOTED.
3. ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL BE AS NOTED.
4. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE INTERNATIONAL RESIDENTIAL CODE BOOK (IRC) AND THE INTERNATIONAL ENERGY CONSERVATION CODE (IECC).
5. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC).
6. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE (IMC).
7. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE (IPC).
8. ALL CONCRETE SHALL BE 3000 PSI STRENGTH.
9. ALL FOUNDATION SHALL BE 12" MINIMUM THICKNESS.
10. ALL EXTERIOR WALLS SHALL BE 8" MINIMUM THICKNESS.
11. ALL ROOFING SHALL BE AS NOTED.
12. ALL SLOPES SHALL BE AS NOTED.
13. ALL UTILITIES SHALL BE AS NOTED.
14. ALL SETBACKS SHALL BE AS NOTED.
15. ALL DISTANCES SHALL BE AS NOTED.
16. ALL ANGLES SHALL BE AS NOTED.
17. ALL CURVES SHALL BE AS NOTED.
18. ALL TOLERANCES SHALL BE AS NOTED.
19. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL BUILDING DEPARTMENT.
20. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL HEALTH DEPARTMENT.
21. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL FIRE DEPARTMENT.
22. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL POLICE DEPARTMENT.
23. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PUBLIC UTILITIES COMPANY.
24. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL WATER SUPPLY AGENCY.
25. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL SEWERAGE AND WASTE WATER TREATMENT PLANT.
26. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.
27. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ENVIRONMENTAL AGENCY.
28. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ZONING COMMISSION.
29. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PLANNING COMMISSION.
30. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL COMMUNITY DEVELOPMENT DEPARTMENT.
31. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL ECONOMIC DEVELOPMENT DEPARTMENT.
32. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TOURISM DEPARTMENT.
33. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL CULTURAL AFFAIRS DEPARTMENT.
34. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL RECREATION DEPARTMENT.
35. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL PARKS AND RECREATION DEPARTMENT.
36. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL LAND USE DEPARTMENT.
37. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL INFRASTRUCTURE DEPARTMENT.
38. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.
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50. ALL WORK SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE LOCAL TRANSPORTATION DEPARTMENT.

**F5**

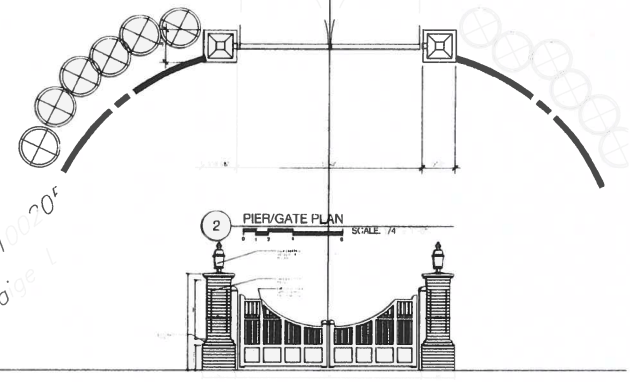
F5 DESIGN/ARCHITECTURE INC.  
PO BOX 88  
NEW ALBANY, OHIO 43054  
WWW.F5DESIGN.COM  
EMAIL@F5DESIGN.COM  
TEL 614 224 4848

**THE BEVIS ESTATE**

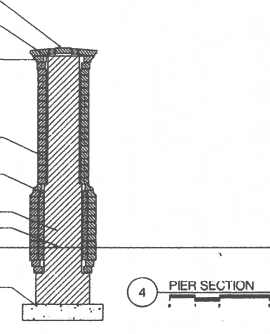
**PRICING SET**



GUZZO AND GARNER CUSTOM BUILDERS



2. PIER/GATE PLAN SCALE 1/4"



3. PIER/GATE ELEVATION SCALE 1/4"



4. PIER SECTION SCALE 1/2"

SCALE AS NOTED  
PROJECT NO. 20042

1 SEPT. 2021

**L100**

# THE BEVIS ESTATE

## 6984 LAMBTON PARK ROAD

### NEW ALBANY, OHIO

THE BEVIS ESTATE - 6984 LAMBTON PARK ROAD



REVIEW SET - NOT FOR CONSTRUCTION

PERMIT REVIEW - 23 AUG. 2021

**GUZZO AND GARNER CUSTOM BUILDERS**

**JACK D. WALTERS AND ASSOCIATES, INC.**  
1100 W. 7TH PARKWAY  
DEPT. 201 (2ND FLOOR)  
114 888-2518  
114 888-5400 FAX

**F5**

F5 DESIGN/ARCHITECTURE INC.  
PO BOX 88  
NEW ALBANY, OHIO 43054  
WWW.F5DESIGN.COM  
EMAIL@F5DESIGN.COM  
TEL (614) 224-4848

**DRAWING LIST:**

- A000 COVER SHEET
- L100 SITE PLAN
- A100 GENERAL LOWER LEVEL PLAN
- A101 LOWER LEVEL PLAN
- A102 LOWER LEVEL PLAN - GARAGE W/RRS
- A103 LOWER LEVEL PLAN
- A200 FIRST FLOOR PLAN
- A201 FIRST FLOOR PLAN
- A300 SECOND FLOOR PLAN
- A400 ROOF PLAN
- A500 EXTERIOR ELEVATIONS
- A501 EXTERIOR ELEVATIONS
- A502 EXTERIOR ELEVATIONS
- A503 EXTERIOR ELEVATIONS
- A504 EXTERIOR ELEVATIONS
- A505 EXTERIOR ELEVATIONS
- A600 BUILDING SECTIONS
- A601 BUILDING SECTIONS
- A602 BUILDING SECTIONS
- A700 WALL SECTIONS AND DETAILS
- A701 ENTRY SECTIONS AND DETAILS
- E100 ELECTRIC PLANS
- E101 ELECTRIC PLANS
- E102 ELECTRIC PLANS
- E103 ELECTRIC PLANS
- E104 ELECTRIC PLANS
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- E129 ELECTRIC PLANS
- E130 ELECTRIC PLANS



A100

16 AUG. 2021

OVERALL FLOOR PLANS

SCALE AS NOTED  
PROJECT NO. 20042

BUILDERS  
GUZZO AND  
GARNER CUSTOM

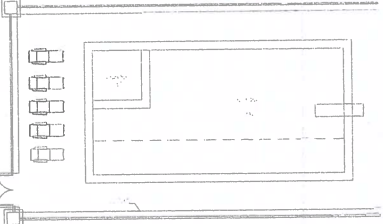
SCALE SET  
PRICING

NEW ALBANY, OHIO 43054  
NEW ALBANY, OHIO  
ESTATE

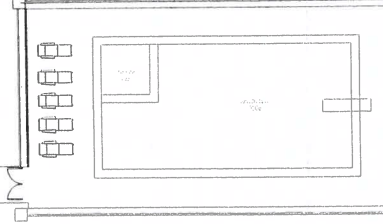
TEL (614) 286-4888  
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F5

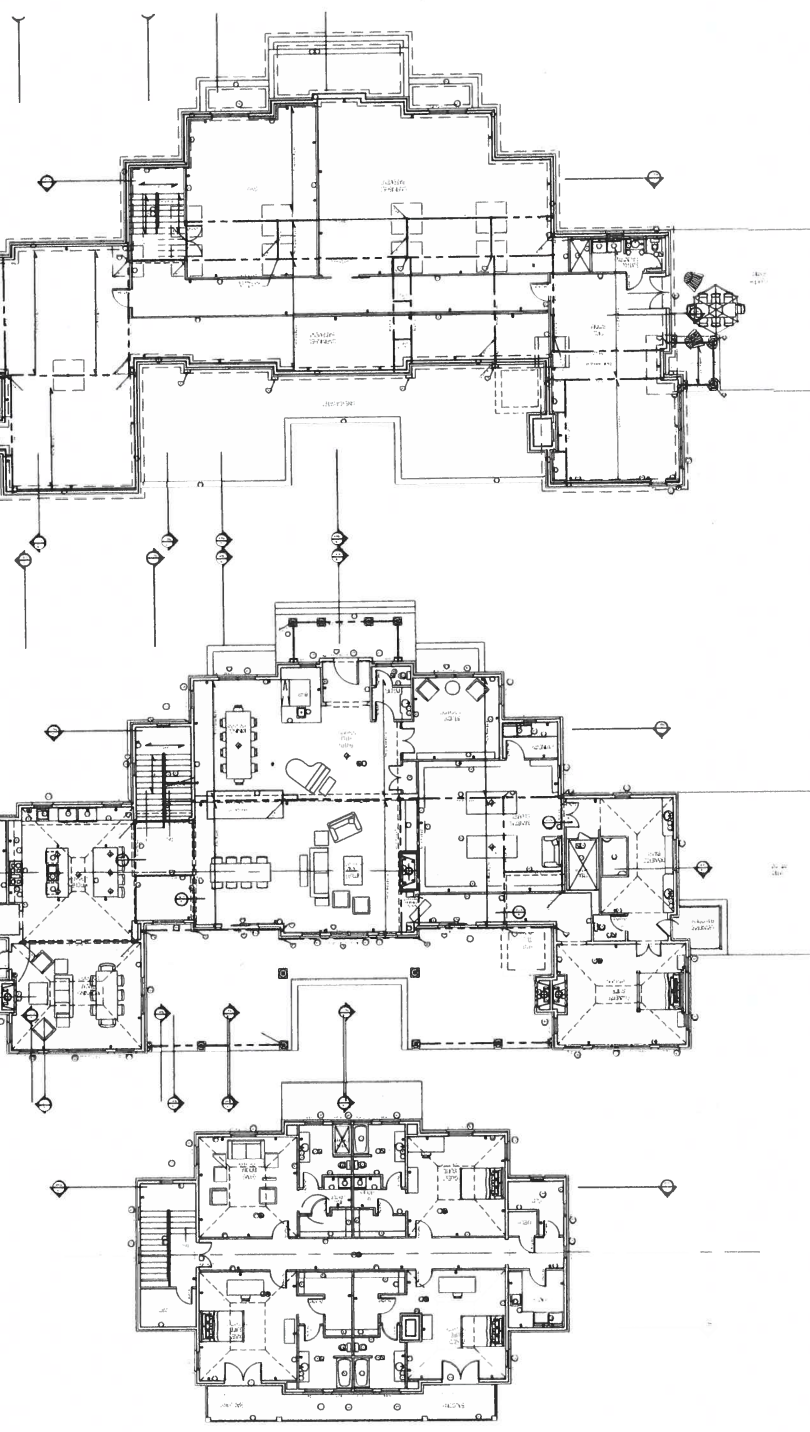
1 LOWER LEVEL PLAN - 2,700 FIN. S.F.



2 OVERALL FIRST FLOOR PLAN - 5804 FIN. S.F.



3 OVERALL SECOND FLOOR PLAN - 2700 FIN. S.F.



A102

16 AUG. 2021

LOWER LEVEL PLAN

SCALE AS NOTED  
PROJECT NO. 20042

BUILDERS  
GUZZO AND  
GARNER CUSTOM

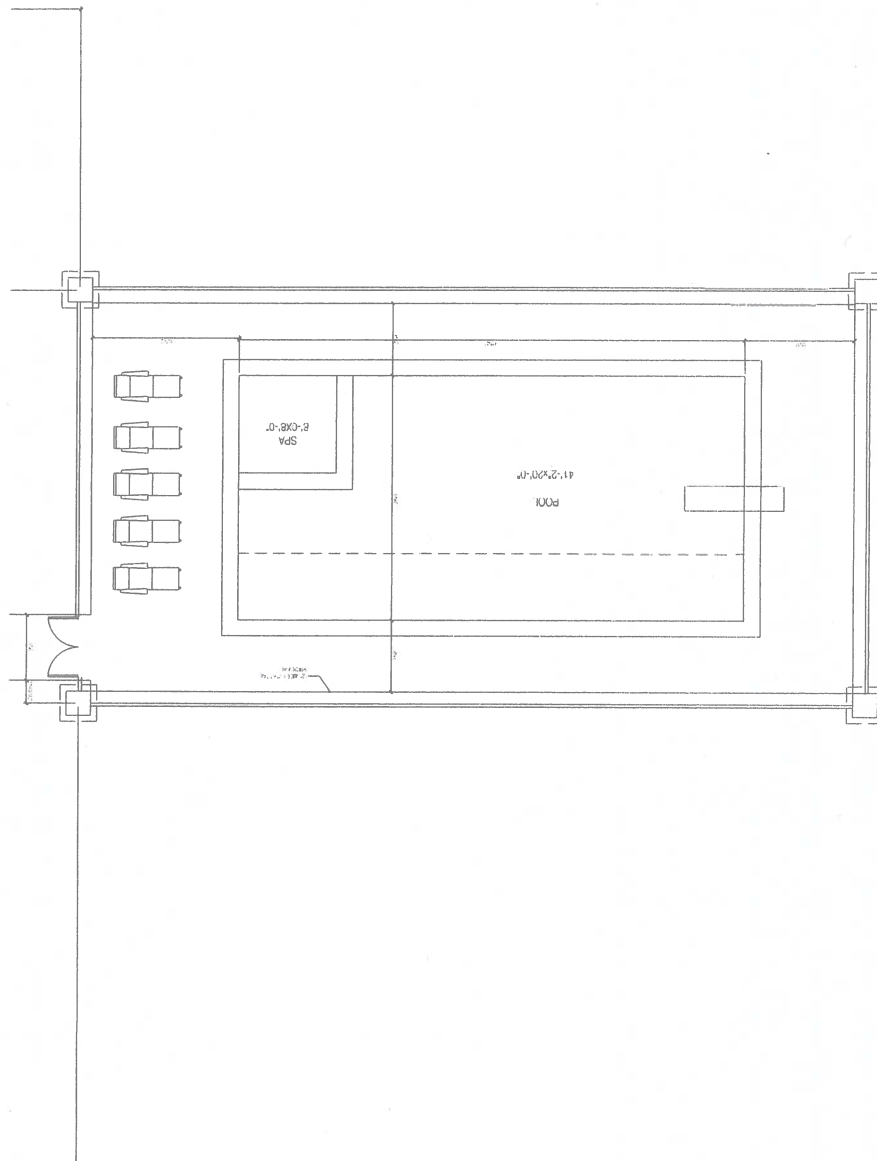
SCALE SET  
PRICING

NEW ALBANY, OHIO  
ESTATE

TEL (614) 286-4888  
WWW.F5DESIGN.COM  
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F5 DESIGN/ARCHITECTURE INC.

F5

1 LOWER LEVEL PLAN - POOL AREA





ARC MATERIALS FORM - STRUCTURES

Version Date:	9 Sept. 2021
Project Address:	6984 LAMBTON PARK ROAD
SECTION	EDGEM.
Lot No.:	2

INSTRUCTIONS AND INFORMATION

- For all new construction and renovation projects this form must be typed. Handwritten will not be accepted.
- This form must be complete and cannot be piecemealed in separate submissions (*with the exception for a secondary submission for doors and windows*).
- Changes in exterior materials shall be subject to specific ARC approval and are to be resubmitted via revision of this form highlighting the changed product(s) in **yellow**.
- Please insert N/A for any line items that are not applicable to this project.
- Please take notice of any required (in **red**) additional documentation noted for each section below. The ARC reserves the right to request additional product information and samples at any time.
- You must have ARC approval of your 'final' site plan, 'final' elevations and this exterior materials form before you can break ground. Breaking ground before all necessary ARC approvals are obtained will result in an immediate \$1,000.00 fine.
- Window and door shop drawings are required to be submitted to the project architect and to the ARC for review and approval prior to ordering.
- Any questions should be directed to the ARC ([arc@nacccchoa.org](mailto:arc@nacccchoa.org)).

<b>MAIN ROOF – Spec Sheet and/or Sample May Be Requested</b>	
MANUFACTURER:	Vermont Slate
TYPE / SPECS / SERIES:	Slate
COLOR:	Gray/Black
OTHER NOTES:	
<b>ANCILLARY ROOF(S) – Spec Sheet and/or Sample Required if Different Than Main Roof</b>	
MANUFACTURER:	
TYPE / SPECS / SERIES:	
COLOR:	
OTHER NOTES:	
<b>GUTTERS &amp; DOWNSPOUTS – Spec Sheet and/or Sample May Be Requested</b>	
MATERIAL:	Copper
STYLE:	OGEE
COLOR:	
OTHER NOTES:	
<b>STRUCTURE BRICK – Sample May Be Requested</b>	
MANUFACTURER:	Glen Gery
SIZE:	HMOS
COLOR:	White painted – dune white
MORTAR COLOR:	Lite Buff
ACCENT BRICK:	
SPECIFIED SHAPE(S):	Water Table
OTHER NOTES:	
<b>SIDING – Sample May Be Requested</b>	
MANUFACTURER:	JAMES HARDIE
STYLE:	SMOOTH HORIZONTAL LAP
EXPOSURE:	8"
COLOR:	DUNE WHITE
OTHER NOTES:	

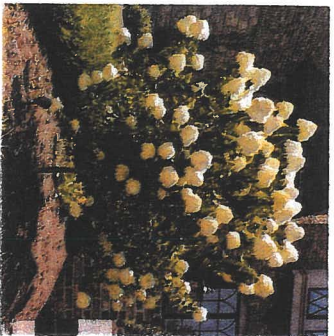
ARC MATERIALS FORM  
(continued)

<b>TRIM – Sample May Be Requested</b>	
MANUFACTURER:	
STYLE:	Smooth Sawn Cedar/HARDIE
COLOR:	Navajo White
OTHER NOTES:	
<b>SHUTTERS – Pictures / Spec Sheet Required</b>	
MATERIAL:	
STYLE:	
STAIN / PAINT COLOR:	
OTHER NOTES:	
<b>GARAGE DOOR(S) – Pictures / Spec Sheet Required – If Windowed, Shop Drawings Required</b>	
MANUFACTURER:	Wayne Dalton
STYLE:	9700
MATERIAL:	Steel
STAIN / PAINT COLOR:	Black
OTHER NOTES:	
<b>DRIVEWAY – Sample May Be Requested</b>	
PRIMARY MATERIAL:	Asphalt
SIZE:	
COLOR:	black
ACCENT MATERIAL:	
SIZE:	
COLOR:	
MORTAR COLOR:	
OTHER NOTES:	
<b>WALKWAY(S) – Sample May Be Requested</b>	
PRIMARY MATERIAL:	BLUE STONE
COLOR:	Pennsylvania blue
ACCENT MATERIAL:	
SIZE:	
COLOR:	
MORTAR COLOR:	
OTHER NOTES:	
<b>EXTERIOR LIGHTING – Pictures / Spec Sheet Required</b>	
FRONT DOOR / PORCH:	COPPERSMITH LIGHTING – GEORGETOWN SERIES
GARAGE DOORS:	
OTHER EXTERIOR DOORS:	
REAR PATIO/DECK:	
OTHER NOTES:	
<b>OTHER – Spec Sheet, Pictures and/or Sample May Be Requested</b>	

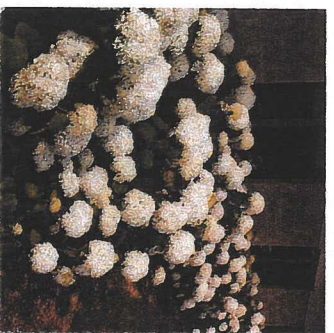




Miss Kim Lilac



Limelight Hydrangea



Annabelle Hydrangea



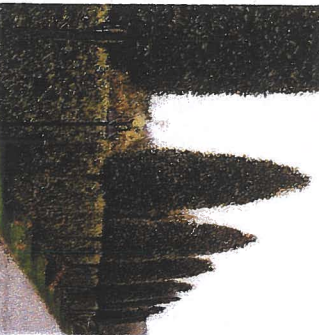
Lily Turf



Pennsylvania Sedge



Fed Maple



Frans Fontaine Hornbeam



Spartan Juniper



Green Giant Arborvitae



Wintergreen Boxwood



Green Mountain Boxwood



Dense Yew



Autumn Fern

Conceptual Landscape Plants

The Bevis Estate

29 April 2021



Landscape Plan

The Bevis Estate

15 SEPT. 2021





**Planning Commission Staff Report  
March 20, 2023 Meeting**

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**MARKET STREET EAST EXTENSION  
PRELIMINARY AND FINAL PLAT**

---

**LOCATION:** Generally located southeast of the East Granville Street and South High Street Intersection

**APPLICANT:** City of New Albany

**REQUEST:** Preliminary and Final Plat

**ZONING:** 1998 Comprehensive Planned Unit Development (C-PUD) Subareas 2A (North Farms) and 2B (North Farms Cluster), Urban Center District (UCD), Community Facilities District (CF), Residential Estate District (R-1)

**STRATEGIC PLAN:** Parks and Green Space within the Village Center Boundary

**APPLICATION:** FPL-30-2023

Review based on: Application materials received February 9, 2023.

*Staff report completed by Chris Christian, Planner II.*

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**I. REQUEST AND BACKGROUND**

The application is for a combined preliminary and final plat to dedicate right-of-way for the extension of Market Street to Third Street in the Village Center. This new public street extension is envisioned in the Engage New Albany Strategic Plan as a critical connection in the Village Center in order to disperse and convey traffic in the area, alleviating travel times and reducing congestion. In order to fully accommodate this new public street, right-of-way is also proposed to be dedicated along East Granville Street, South High Street, Third Street and Main Street.

**II. SITE DESCRIPTION & USE**

The majority of the proposed right-of-way dedication extends east from Market Street, which currently dead-ends at South High Street. The right-of-way continues east from New Albany Condit Road until it curves towards the north, and eventually intersects with East Granville Street. The property is located within multiple different zoning district and is currently vacant.

**III. PLAN REVIEW**

Planning Commission's review authority of the preliminary and final plat is found under C.O. Section 1187. Upon review of the final plat the Commission is to make recommendation to City Council. Staff's review is based on city plans and studies, zoning text, zoning regulations.

- This plat dedicates right-of-way to the City of New Albany for the extension of Market Street. The dedication extension consists of approximately 1,246+/- linear feet for a total of approximately 3.17+/- acres. There are no reserves being platted or lots being created within this new right-of-way extension.
- The plat dedicates 70' of right-of-way. The street extends through several zoning districts on land that is currently vacant. There are several proposed utility and drainage easements shown on the plat which vary in size.
- This new public street is identified as a minor arterial road typology in the Engage New Albany strategic plan. According the plan, this new road should be designed at a Village Center scale in order to accommodate traffic while maintaining the pedestrian oriented nature

of the Village Center. The proposed 70 feet of right-of-way is consistent with the 62-91 foot width recommendation in the Engage New Albany strategic plan.

#### IV. ENGINEER'S COMMENTS

The city engineer has reviewed the referenced plan in accordance with the engineering related requirements of Code Section 1159.07(b)(3) and provided no comments.

#### V. SUMMARY

##### ***Basis for Approval:***

The proposed road plat is consistent with the goals and objectives found in the Engage New Albany strategic plan for this area. This road will serve as a critical connection within Village Center by assisting with the dispersal of traffic and alleviation of congestion.

#### VI. ACTION

##### **Suggested Motion for FPL-30-2023 (additional conditions may be added):**

Move to approve FPL-30-2023.

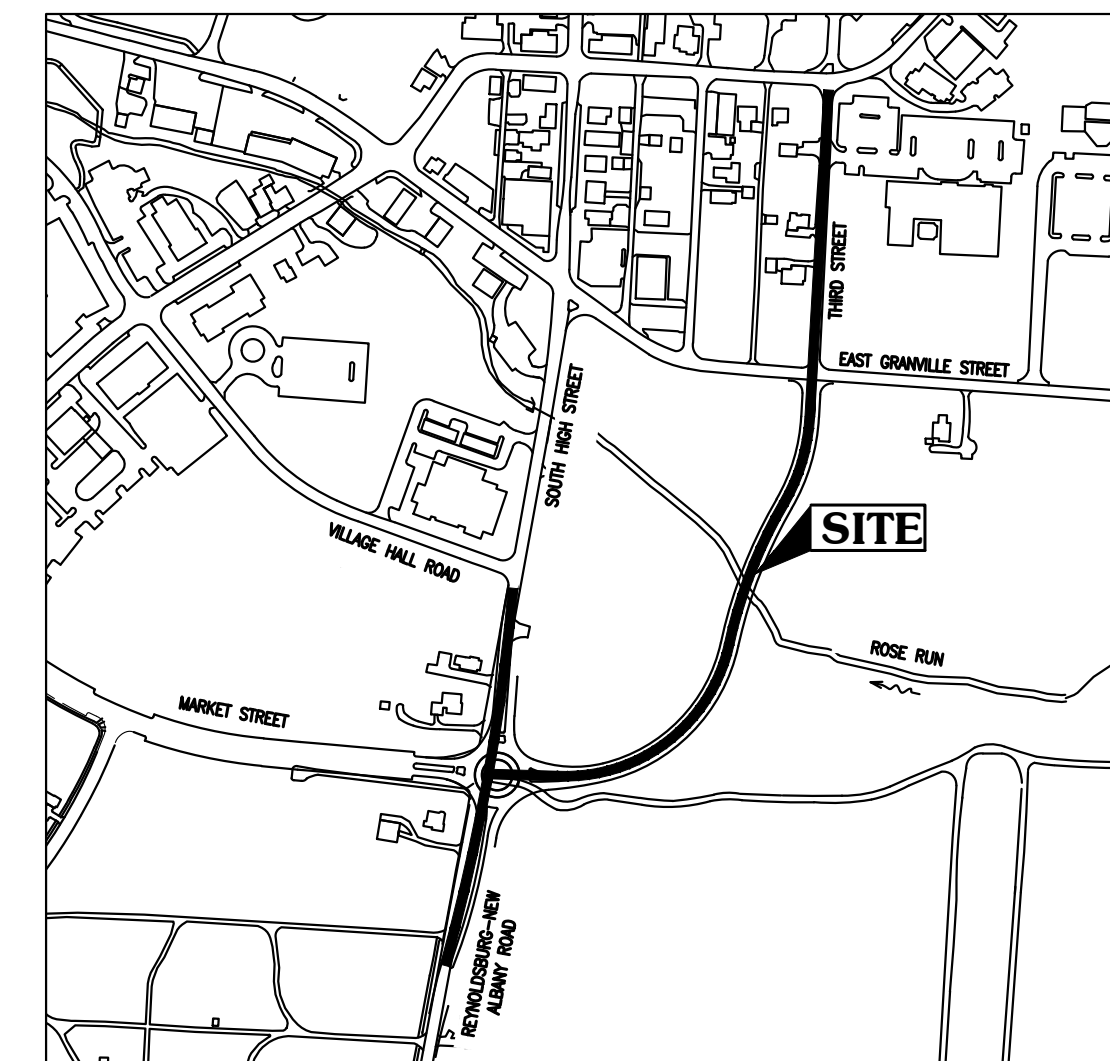
##### **Approximate Site Location:**



Source: NearMap



# MARKET STREET, REYNOLDSBURG-NEW ALBANY ROAD, SOUTH HIGH STREET, EAST GRANVILLE STREET, THIRD STREET & MAIN STREET DEDICATION AND EASEMENTS



LOCATION MAP  
NTS

Situated in the State of Ohio, County of Franklin, City of New Albany, and in Quarter Township 4, Township 2, Range 16, United States Military Lands, being a resubdivision of Lots 8, 9, 10, 14 and 16 of G.D. Uly's Addition to New Albany, as recorded in Plat Book 5, Page 402, also being a resubdivision of Lot 61 through Lot 70, inclusive, of the Town Plat (Diagram) of New Albany, as recorded in Deed Book 17, Page 278, containing 3.1885 acres of land, more or less, said 3.1885 acres being comprised of 1) part of the 1.7970 acre tract conveyed to The New Albany Company LLC by deed of record in O.R.V. 34852, Pg. B04, 2) part of the 0.143 acre tract conveyed to The New Albany Company LLC by deed of record in Instrument Number 200201280025159, 3) part of the 2.277 acre tract conveyed to The New Albany Company LLC by deed of record in O.R.V. 31702, Pg. J19, 4) part of the 4.999 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 5) part of the 5 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143273, 6) part of the 1.856 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 7) part of the 1.808 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 8) part of the 1.736 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143283, 9) part of the 1.325 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 10) part of the 3.235 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 11) part of the 0.566 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143281, 12) part of the 7.504 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143273, 13) part of the 4.811 acre tract conveyed to Whitebarn Organics, LLC by deed of record in Instrument Number 201209250143273, 14) part of a tract containing Lots 60 and 61 of said plat of New Albany, conveyed to The New Albany Company LLC by deed of record in Instrument Number 201605250066064, 15) part of a tract containing Lots 62 through 64, inclusive, of said plat of New Albany, conveyed to The New Albany Company LLC by deed of record in Instrument Number 201912160168970, 16) part of a tract containing Lot 65 of said plat of New Albany, conveyed to The New Albany Company LLC by deed of record in Instrument Number 202007010094955, 17) part of a tract containing Lots 66 and 67 of said plat of New Albany, conveyed to The New Albany Company LLC by deed of record in Instrument Number 201808100107713, 18) part of a tract containing Lots 68 through 70, inclusive, of said plat of New Albany, conveyed to The New Albany Company LLC by deed of record in Instrument Number 202009290147728, all references refer to the record of the Recorder's Office, Franklin County, Ohio.

The undersigned, The New Albany Company LLC, a Delaware limited liability company by and Whitebarn Organics, LLC, an Ohio limited liability company by owners of the lands platted herein, duly authorized in the premises, does hereby certify that this plat correctly represents its "MARKET STREET, REYNOLDSBURG-NEW ALBANY ROAD, SOUTH HIGH STREET, EAST GRANVILLE STREET, THIRD STREET & MAIN STREET DEDICATION AND EASEMENTS." and does hereby accept this plat of same and dedicates to public use, as such, all of Market Street, Reynoldsburg-New Albany Road, South High Street, East Granville Street, Third Street & Main Street shown hereon and heretofore dedicated.

Easements are hereby reserved in, over, and under areas designated on this plat as "Utility Easement", the aforementioned designated easement permit the construction, operation and maintenance of all public and quasi public utilities, above beneath and on the surface of the ground, and where necessary, for the construction, operation, and maintenance of service connections to all adjacent lots and lands and for storm water drainage. Within those areas designated "Drainage Easement" on this plat, an additional easement is hereby reserved for the purpose of constructing, operating and maintaining major storm water drainage swales and or other storm water drainage facilities. No above grade structures, dams or other obstructions to the flow of storm water runoff, unless approved by the City Engineer, are permitted within Drainage Easement areas as delineated on this plat. Areas shown hereon outside of the platted area are within land owned by the undersigned and easements are hereby granted therein for the uses and purposes expressed herein.

In Witness Whereof, \_\_\_\_\_,  
\_\_\_\_\_, has hereunto set his hand this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Signed and acknowledged in the presence of: \_\_\_\_\_

By: \_\_\_\_\_

STATE OF OHIO  
COUNTY OF FRANKLIN ss:

Before me, a Notary Public, in and for said State, personally appeared \_\_\_\_\_ who acknowledged the signing of the foregoing instrument to be his free and voluntary act and deed and the free and voluntary act and deed of said \_\_\_\_\_ for the uses and purposes expressed therein.

In Witness Thereof, I have hereunto set my hand and affixed my official seal this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

My commission expires \_\_\_\_\_  
Notary Public, State of Ohio

In Witness Whereof, \_\_\_\_\_,  
\_\_\_\_\_, has hereunto set his hand this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Signed and acknowledged in the presence of: \_\_\_\_\_

By: \_\_\_\_\_

STATE OF OHIO  
COUNTY OF FRANKLIN ss:

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In Witness Thereof, I have hereunto set my hand and affixed my official seal this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

My commission expires \_\_\_\_\_  
Notary Public, State of Ohio

Approved this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Mayor, New Albany, Ohio

Approved this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
City Engineer, New Albany, Ohio

Approved this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Council Representative to Planning Commission, New Albany, Ohio

Approved this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Chairperson, Planning Commission, New Albany, Ohio

Approved this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Finance Director, New Albany, Ohio

Approved and accepted by Resolution No. \_\_\_\_\_, passed \_\_\_\_\_, 20\_\_, wherein all of Market Street, Reynoldsburg-New Albany Road, Dublin-Granville Road, Third Street and Main Street shown dedicated hereon is accepted, as such, by the Council for the City of New Albany, Ohio. The City of New Albany, Ohio, approval of this plat shall become null and void unless recorded prior to \_\_\_\_\_, 20\_\_.

Transferred this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Auditor, Franklin County, Ohio

\_\_\_\_\_  
Deputy Auditor, Franklin County, Ohio

Filed for record this \_\_\_\_ day of \_\_\_\_\_, 20\_\_ at \_\_\_\_\_  
\_\_\_\_\_  
Recorder, Franklin County, Ohio

Fee \$ \_\_\_\_\_

File No. \_\_\_\_\_

Recorded this \_\_\_\_ day of \_\_\_\_\_, 20\_\_  
\_\_\_\_\_  
Deputy Recorder, Franklin County, Ohio

Plat Book \_\_\_\_\_, Pages \_\_\_\_\_

## SURVEY DATA:

**BASIS OF BEARINGS:** The bearings shown on this plat were transferred from a field traverse originating and is based on the Ohio State Plane Coordinate System, South Zone as per NAD 83, 1986 adjustment. A bearing of North 10°31'41" East was held for a portion of the existing centerline of Reynoldsburg-New Albany Road, between centerline monuments FCGS 9916A and FCGS 9916B designated the "basis of bearing" for this plat.

**SOURCE OF DATA:** The sources of recorded survey data are the records of the Franklin County, Ohio, Recorder, referenced in the plan and text of this plat.

**IRON PINS,** where indicated hereon, unless otherwise noted, and are solid steel reinforcing bar five-eighths inch (5/8") diameter, thirty inches long with a plastic cap placed in the top end bearing the name "E.P. FERRIS SURVEYOR 8342".

**PERMANENT MARKERS:** Permanent markers, where indicated hereon, are to be one-inch diameter, thirty-inch long, solid iron pins, are to be set to monument the points indicated and are to be set with the top end flush with the surface of the ground and then capped with an aluminum cap stamped EP Ferris. Once installed, the top of the cap shall be marked (punched) to record the actual location of the point. These markers shall be set following the completion of the construction/installation of the street pavement and utilities and prior to the City of New Albany, Ohio's acceptance of these improvements. The New Albany, Ohio, Municipal Engineer shall be notified when the markers are in place.

## FLOOD NOTE:

All of the subject property is located in Zone X (Areas determined to be outside of the 0.2% annual chance floodplain) and Zone X (Areas of 0.2% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.) of Flood Insurance Rate Map (FIRM) Map Number 39049C0208K (June 17, 2008).

PREPARED BY

**E. P. FERRIS AND ASSOCIATES, INC.**

CONSULTING CIVIL ENGINEERS & SURVEYORS  
2130 QUARRY TRAILS DR., 2ND FLOOR, COLUMBUS, OHIO 43228

We do hereby certify that we have surveyed the above premises, prepared the attached plat, and that said plat is correct to the best of my knowledge. All dimensions are in feet and decimal parts thereof.



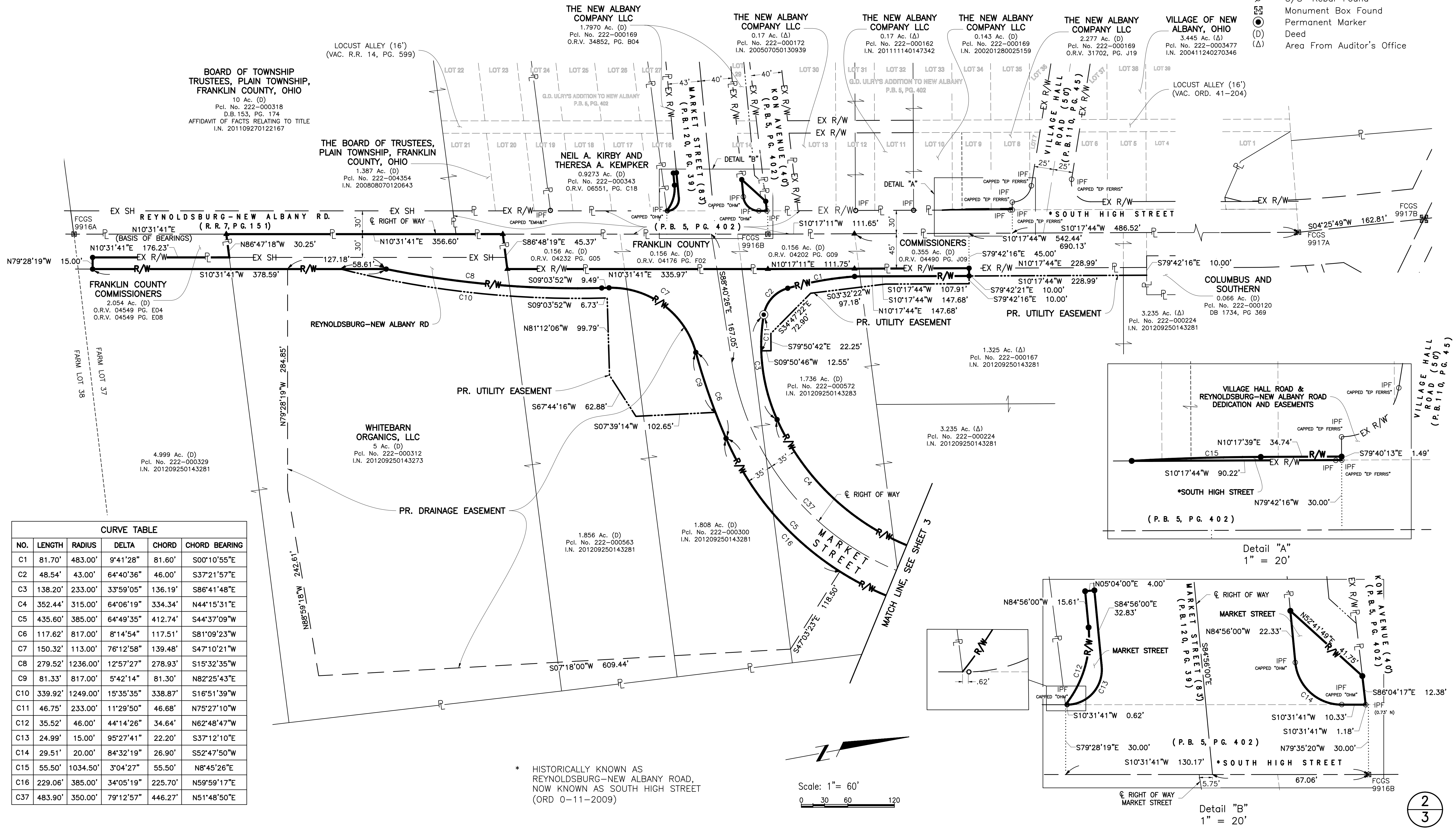
BY: \_\_\_\_\_  
Matthew Lee Sloat, P.E., P.S.  
Registered Surveyor No. 8342



# MARKET STREET, REYNOLDSBURG-NEW ALBANY ROAD, SOUTH HIGH STREET, EAST GRANVILLE STREET, THIRD STREET & MAIN STREET DEDICATION AND EASEMENTS

## LEGEND

- EX R/W Existing Right-of-Way
- EX SH Existing Highway Easement
- R/W Proposed Right-of-Way
- P Property Line
- ⊕ Centerline of Right-of-Way
- Iron Pin Set
- ▲ 3/8"x3" Spike W/ 1" Diam. Head W/ 1.5" Diam. Brass Washer Stamped "E.P. FERRIS SURVEYOR 8342"
- 3/4" Iron Pipe Found
- ⊕ 5/8" Rebar Found
- ⊕ Monument Box Found
- Permanent Marker
- (D) Deed
- (Δ) Area From Auditor's Office



BOARD OF TOWNSHIP TRUSTEES, PLAIN TOWNSHIP, FRANKLIN COUNTY, OHIO  
 10 Ac. (D)  
 Pcl. No. 222-000318  
 D.B. 153, PG. 174  
 AFFIDAVIT OF FACTS RELATING TO TITLE  
 I.N. 201109270122167

THE BOARD OF TRUSTEES, PLAIN TOWNSHIP, FRANKLIN COUNTY, OHIO  
 1.387 Ac. (D)  
 Pcl. No. 222-004354  
 I.N. 200808070120643

THE NEW ALBANY COMPANY LLC  
 1.7970 Ac. (D)  
 Pcl. No. 222-000169  
 O.R.V. 34852, PG. B04

THE NEW ALBANY COMPANY LLC  
 0.17 Ac. (Δ)  
 Pcl. No. 222-000172  
 I.N. 200507050130939

THE NEW ALBANY COMPANY LLC  
 0.17 Ac. (Δ)  
 Pcl. No. 222-000162  
 I.N. 201111140147342

THE NEW ALBANY COMPANY LLC  
 0.143 Ac. (D)  
 Pcl. No. 222-000169  
 I.N. 200201280025159

THE NEW ALBANY COMPANY LLC  
 2.277 Ac. (D)  
 Pcl. No. 222-000169  
 O.R.V. 31702, PG. J19

VILLAGE OF NEW ALBANY, OHIO  
 3.445 Ac. (Δ)  
 Pcl. No. 222-0003477  
 I.N. 200411240270346

NEIL A. KIRBY AND THERESA A. KEMPKER  
 0.9273 Ac. (D)  
 Pcl. No. 222-000343  
 O.R.V. 06551, PG. C18

FRANKLIN COUNTY COMMISSIONERS  
 2.054 Ac. (D)  
 O.R.V. 04549 PG. E04  
 O.R.V. 04549 PG. E08

WHITEBARN ORGANICS, LLC  
 5 Ac. (D)  
 Pcl. No. 222-000312  
 I.N. 201209250143273

1.856 Ac. (D)  
 Pcl. No. 222-000563  
 I.N. 201209250143281

1.808 Ac. (D)  
 Pcl. No. 222-000300  
 I.N. 201209250143281

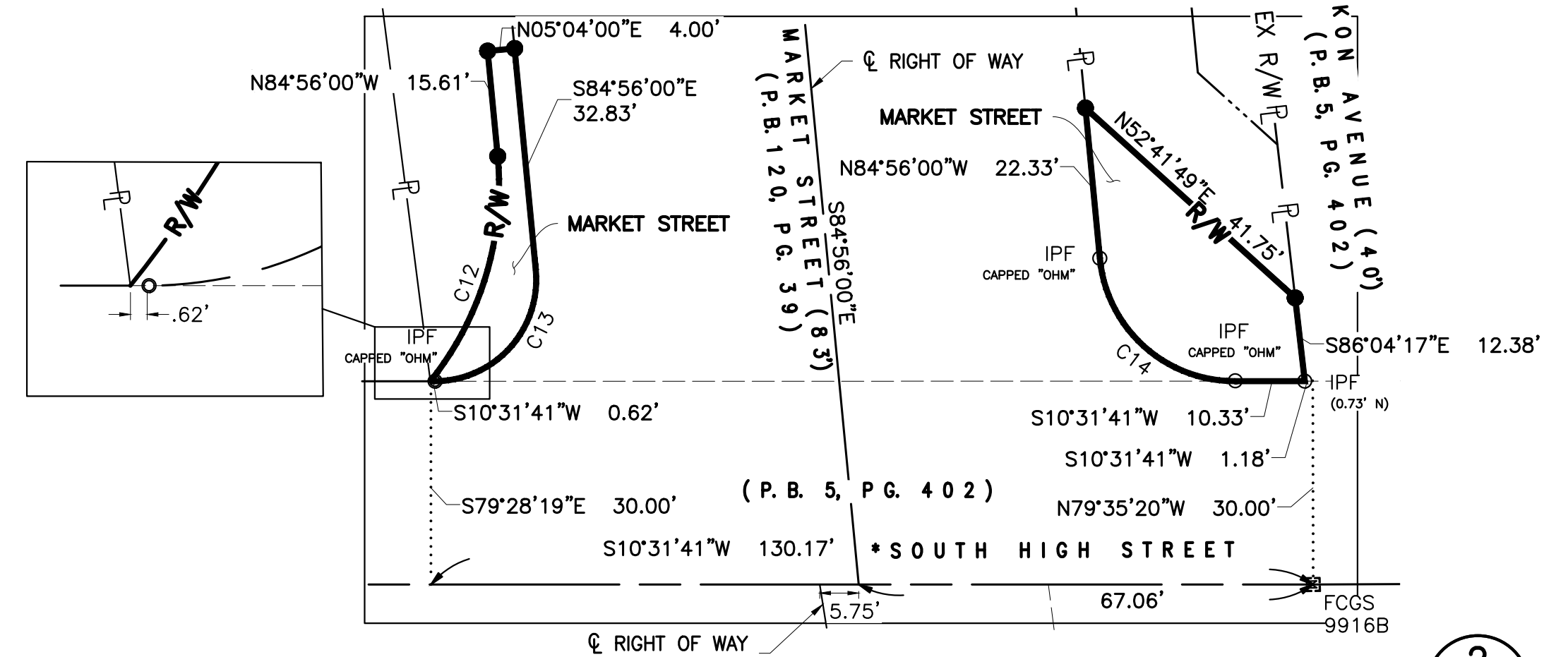
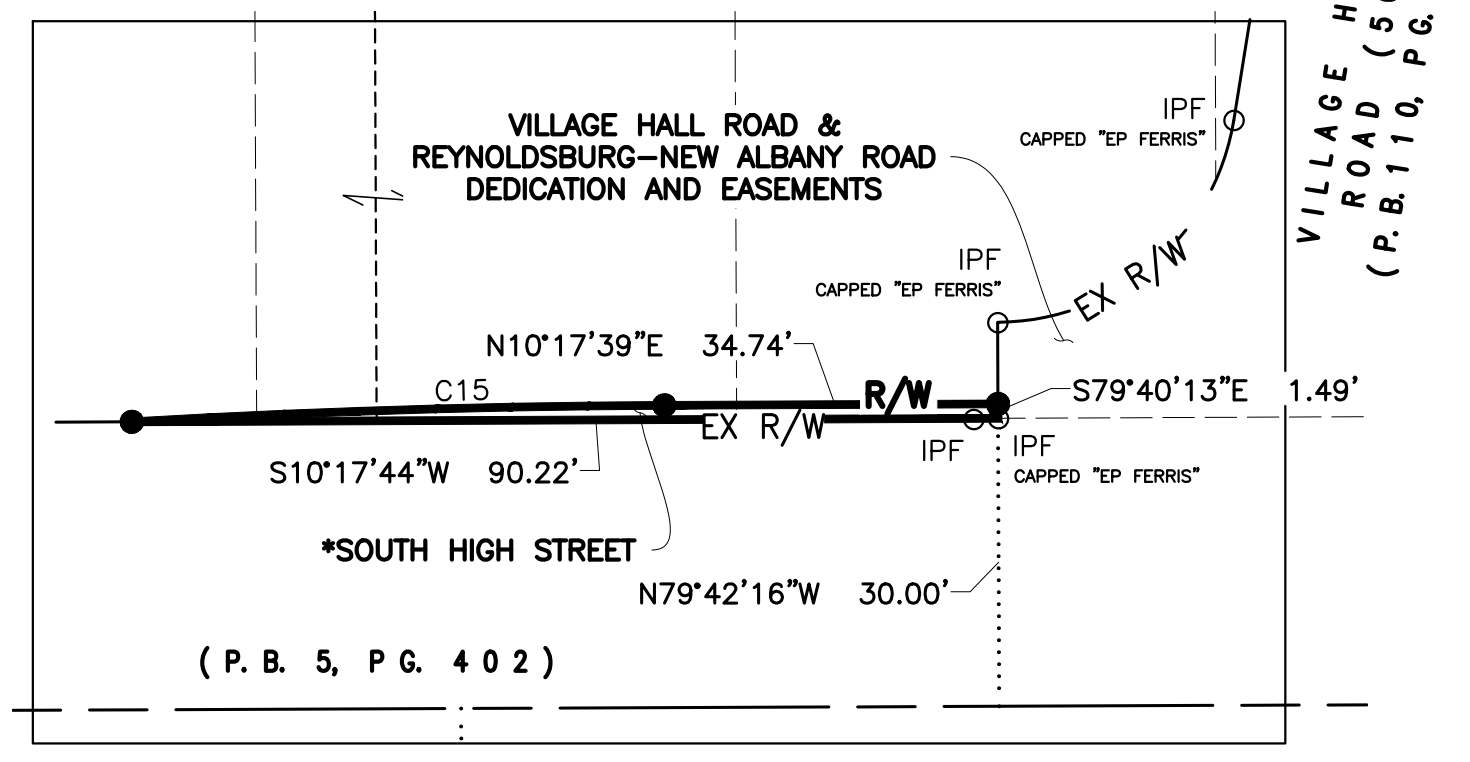
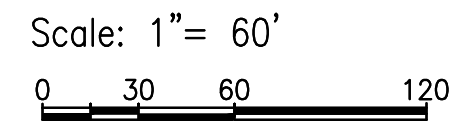
3.235 Ac. (Δ)  
 Pcl. No. 222-000224  
 I.N. 201209250143281

VILLAGE HALL ROAD & REYNOLDSBURG-NEW ALBANY ROAD DEDICATION AND EASEMENTS  
 (P.B. 5, PG. 402)

\*SOUTH HIGH STREET  
 (P.B. 5, PG. 402)

CURVE TABLE					
NO.	LENGTH	RADIUS	DELTA	CHORD	CHORD BEARING
C1	81.70'	483.00'	9°41'28"	81.60'	S00°10'55"E
C2	48.54'	43.00'	64°40'36"	46.00'	S37°21'57"E
C3	138.20'	233.00'	33°59'05"	136.19'	S86°41'48"E
C4	352.44'	315.00'	64°06'19"	334.34'	N44°15'31"E
C5	435.60'	385.00'	64°49'35"	412.74'	S44°37'09"W
C6	117.62'	817.00'	8°14'54"	117.51'	S81°09'23"W
C7	150.32'	113.00'	76°12'58"	139.48'	S47°10'21"W
C8	279.52'	1236.00'	12°57'27"	278.93'	S15°32'35"W
C9	81.33'	817.00'	5°42'14"	81.30'	N82°25'43"E
C10	339.92'	1249.00'	15°35'35"	338.87'	S16°51'39"W
C11	46.75'	233.00'	11°29'50"	46.68'	N75°27'10"W
C12	35.52'	46.00'	44°14'26"	34.64'	N62°48'47"W
C13	24.99'	15.00'	95°27'41"	22.20'	S37°12'10"E
C14	29.51'	20.00'	84°32'19"	26.90'	S52°47'50"W
C15	55.50'	1034.50'	3°04'27"	55.50'	N8°45'26"E
C16	229.06'	385.00'	34°05'19"	225.70'	N59°59'17"E
C17	483.90'	350.00'	79°12'57"	446.27'	N51°48'50"E

\* HISTORICALLY KNOWN AS REYNOLDSBURG-NEW ALBANY ROAD, NOW KNOWN AS SOUTH HIGH STREET (ORD 0-11-2009)

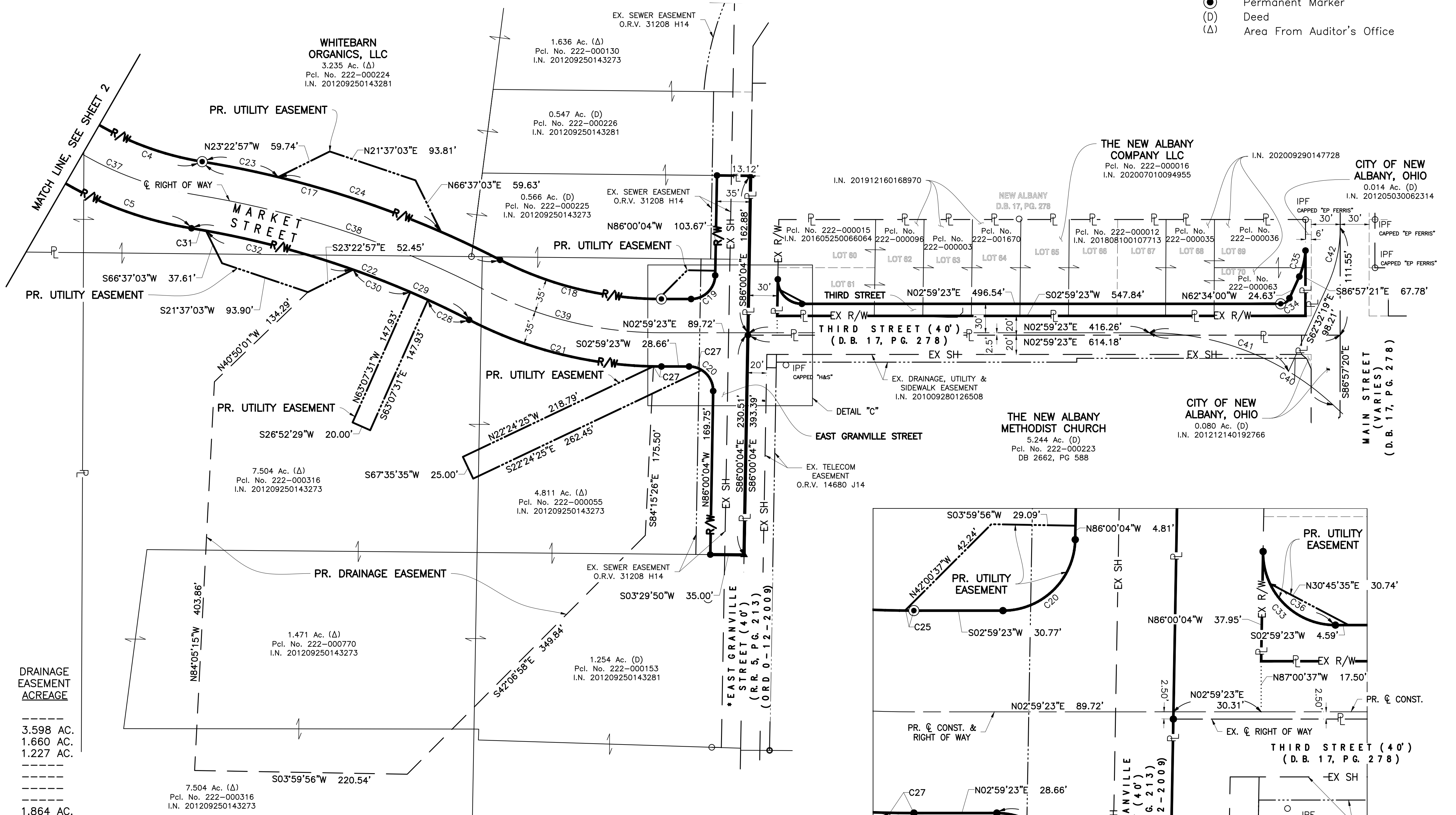


# MARKET STREET, REYNOLDSBURG-NEW ALBANY ROAD, SOUTH HIGH STREET, EAST GRANVILLE STREET, THIRD STREET & MAIN STREET DEDICATION AND EASEMENTS

## LEGEND

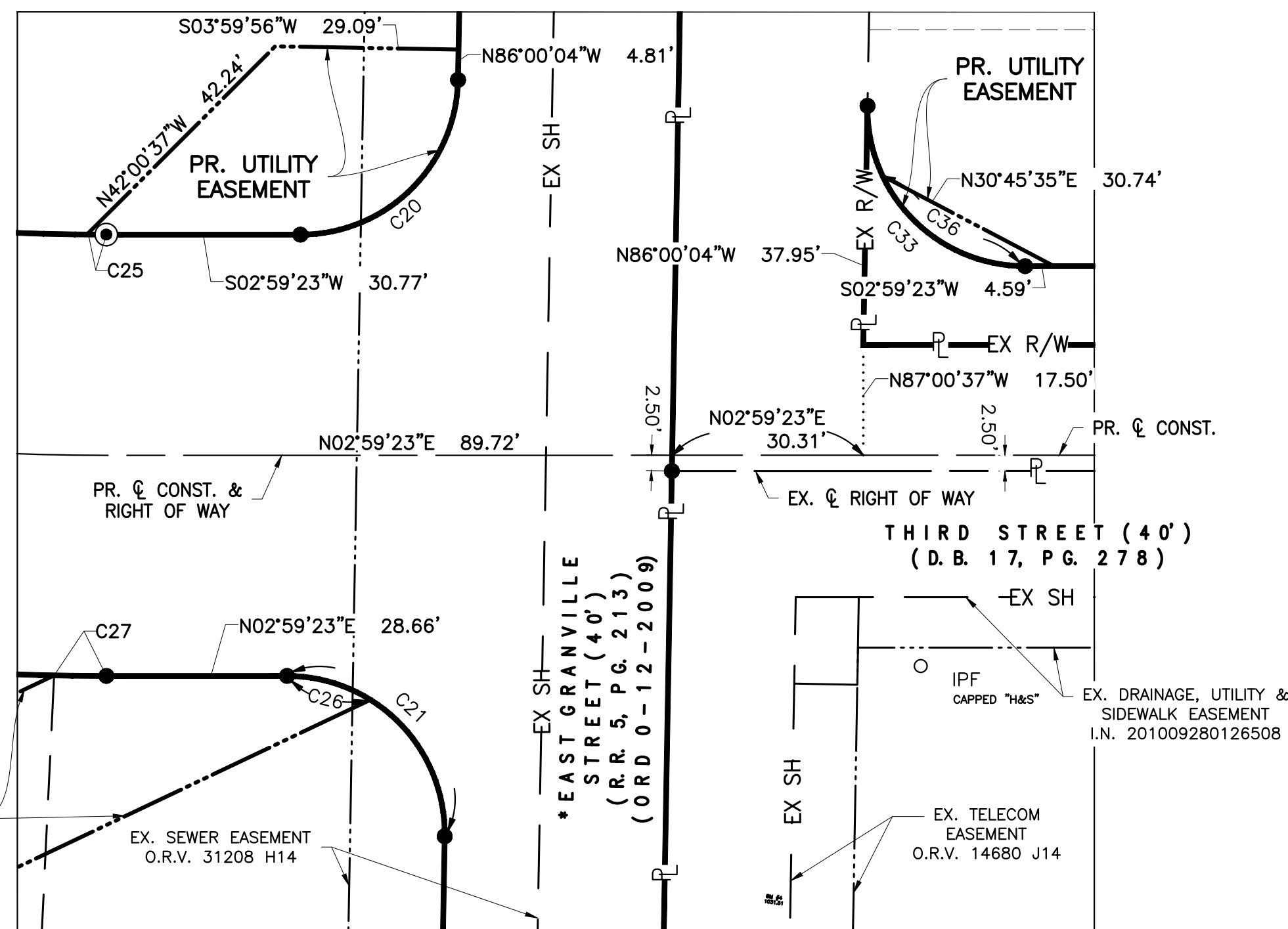
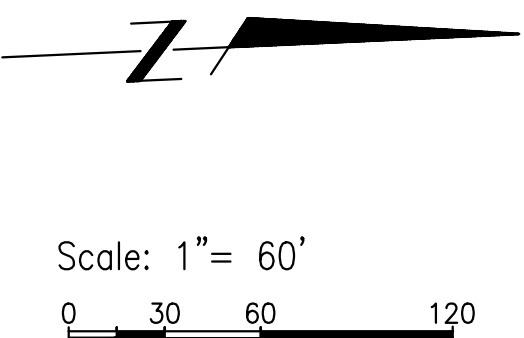
- EX R/W Existing Right-of-Way
- EX SH Existing Highway Easement
- R/W Proposed Right-of-Way
- PL Property Line
- CL Centerline of Right-of-Way
- Iron Pin Set
- ▲ 3/8"X3" Spike W/ 1" Diam. Head W/ 1.5" Diam. Brass Washer Stamped "E.P. FERRIS SURVEYOR 8342"
- 3/4" Iron Pipe Found
- ⊕ 5/8" Rebar Found
- ⊞ Monument Box Found
- ⊙ Permanent Marker
- (D) Deed
- (Δ) Area From Auditor's Office

CURVE TABLE					
NO.	LENGTH	RADIUS	DELTA	CHORD	CHORD BEARING
C4	352.44'	315.00'	64°06'19"	334.34'	N44°15'31"E
C5	435.60'	385.00'	64°49'35"	412.74'	S44°37'09"W
C17	326.56'	1035.00'	18°04'39"	325.20'	N21°14'41"E
C18	173.87'	365.00'	27°17'38"	172.23'	N16°38'12"E
C19	38.83'	25.00'	88°59'26"	35.04'	N41°30'21"W
C20	39.71'	25.00'	91°00'34"	35.67'	S48°29'39"W
C21	207.22'	435.00'	27°17'38"	205.27'	S16°38'12"W
C22	304.47'	965.00'	18°04'39"	303.21'	S21°14'41"W
C23	80.35'	1035.00'	4°26'53"	80.33'	N14°25'48"E
C24	178.43'	1035.00'	9°52'39"	178.21'	S21°35'34"W
C25	3.09'	365.00'	0°29'08"	3.09'	S3°13'57"W
C26	13.93'	25.00'	31°54'55"	13.75'	N18°56'50"E
C27	8.29'	435.00'	1°05'31"	8.29'	N3°32'08"E
C28	47.41'	965.00'	2°48'54"	47.41'	S28°52'33"W
C29	20.00'	965.00'	1°11'15"	20.00'	N26°52'29"E
C30	63.66'	965.00'	3°46'47"	63.65'	S24°23'27"W
C31	7.64'	965.00'	0°54'27"	7.64'	N12°39'35"E
C32	158.11'	965.00'	9°23'16"	157.94'	N17°48'26"E
C33	39.71'	25.00'	91°00'34"	35.67'	N48°29'39"E
C34	11.44'	10.00'	65°33'22"	10.83'	N29°47'19"W
C35	27.88'	79.00'	20°13'21"	27.74'	N7°39'40"W
C36	28.24'	25.00'	64°42'48"	26.76'	S35°20'46"W
C37	483.90'	350.00'	79°12'57"	446.27'	N51°48'50"E
C38	315.51'	1000.00'	18°04'39"	314.21'	N21°14'41"E
C39	190.55'	400.00'	27°17'38"	188.75'	N16°38'12"E
C40	209.47'	280.00'	42°51'46"	204.62'	N24°25'15"E
C41	151.62'	280.00'	31°01'30"	149.77'	N18°30'08"E
C42	61.58'	144.50'	24°25'01"	61.11'	S74°44'50"E



### ACREAGE BREAKDOWN

PARCEL ID	R/W ACREAGE	P.R.O. R/W ACREAGE	UTILITY EASEMENT ACREAGE	DRAINAGE EASEMENT ACREAGE
222-000329	0.061 AC.	-----	-----	-----
222-000312	0.413 AC.	0.246 AC.	0.057 AC.	3.598 AC.
222-000563	0.084 AC.	-----	0.147 AC.	1.660 AC.
222-000300	0.488 AC.	-----	0.261 AC.	1.227 AC.
222-000572	0.496 AC.	-----	0.075 AC.	-----
222-000167	0.032 AC.	-----	0.079 AC.	-----
222-000224	0.566 AC.	-----	0.164 AC.	-----
222-000169	0.024 AC.	-----	-----	-----
222-000316	0.135 AC.	-----	0.139 AC.	1.864 AC.
222-000770	-----	-----	-----	1.197 AC.
222-000153	-----	-----	-----	0.286 AC.
222-000055	0.651 AC.	0.141 AC.	0.160 AC.	0.841 AC.
222-000225	0.070 AC.	0.040 AC.	-----	-----
222-000015	0.032 AC.	-----	0.002 AC.	-----
222-000096	0.014 AC.	-----	-----	-----
222-000003	0.014 AC.	-----	-----	-----
222-001670	0.014 AC.	-----	-----	-----
222-000016	0.014 AC.	-----	-----	-----
222-000012	0.029 AC.	-----	-----	-----
222-000035	0.014 AC.	-----	-----	-----
222-000063	0.037 AC.	-----	-----	-----
222-000036	0.0005 AC.	-----	-----	-----
	(20.91 SF)	-----	-----	-----
<b>TOTAL:</b>	<b>3.1885 AC.</b>	<b>0.427 AC.</b>	<b>1.084 AC.</b>	<b>10.673 AC.</b>



\* HISTORICALLY KNOWN AS WORTHINGTON ROAD, GRANVILLE AND WORTHINGTON ROAD AND DUBLIN-GRANVILLE ROAD, NOW KNOWN AS EAST GRANVILLE STREET (ORD 0-12-2009)

Detail "C"  
1" = 20'